

STIC Database Tracking Number: 241469

To: EUGENIA WANG
Location: REM-6C61
Art Unit: 1795
Wednesday, November 07, 2007

Case Serial Number: 10/5299993

From: MEI HUANG
Location: EIC1700
REM-4B28 / REM-4B31
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mei.huang@uspto.gov

Search Notes

Examiner WANG:

Please feel free to contact me if you have any questions or if you would like to refine the search query. Thank you for using STIC services!

Regards,
Mei

Banks, Kendra

241489

From: EUGENIA WANG [eugenia.wang@uspto.gov]
Sent: Thursday, October 25, 2007 5:10 PM
To: STIC-EIC1700
Subject: Database Search Request, Serial Number: 10/529993

Requester: **EUGENIA WANG (P/1745)**
Art Unit: **GROUP ART UNIT 1745**
Employee Number: **82927**
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Phone Number: **(571)272-4942**
Mailbox Number:

SCIENTIFIC REFERENCE BR
Sci & Tech Inf - Cntr

OCT 26 RECD

Case serial number: **10/529993**
Class / Subclass(es): **429/33, 521/27, 429/42**
Earliest Priority Filing Date: **10/4/02**
Format preferred for results: **Paper**
Attachments: **No attachment.**
Search Topic Information:

Pat. & T.M. Office

The proton-conducting polymer membrane of claim 26, wherein the precursor is either (a) one or more aromatic/heteroaromatic tetraamino compounds with one or more aromatic/heteroaromatic carboxylic acids, with at least part of the tetraamino compounds or the carboxylic acids comprising one sulfonic acid group, wherein the mixture is in polyphosphoric acid or (b) mixing one or more aromatic/heteroaromatic diaminocarboxylic acids, of which at least part comprises sulfonic acid groups, in polyphosphoric acid. This solution should be heated such that the polyphosphoric acid moieties. Claims 27 and 28 give general forms of aromatic/heteroaromatic tetraamino compounds and general aromatic/heteroaromatic carboxylic acids. Specific examples of the general formulas are given in claims 30, 31, 32, 33, 34, and 39.
Special Instructions and Other Comments:



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Bib Data Sheet

CONFIRMATION NO. 5423

SERIAL NUMBER 10/529,993	FILING OR 371(c) DATE 04/12/2005 RULE	CLASS 429	GROUP ART UNIT 1745	ATTORNEY DOCKET NO. 3799.1012-000	
APPLICANTS Oemer Uensal, Mainz, GERMANY; Joachim Kiefer, Losheim am See, GERMANY; Gordon Calundann, North Plainfield, NJ; Michael Sansone, Berkeley Heights, NJ; Brian Benicewiez, Loudonville, NY; Eui Won Choe, Randolph, NJ;					
** CONTINUING DATA ***** This application is a 371 of PCT/EP03/10904 10/02/2003 ** FOREIGN APPLICATIONS ***** GERMANY 102 46 373.5 10/04/2002					
Foreign Priority claimed <input type="checkbox"/> yes <input type="checkbox"/> no 35 USC 119 (a-d) conditions <input type="checkbox"/> yes <input type="checkbox"/> no <input type="checkbox"/> Met after met Allowance Verified and Acknowledged Examiner's Signature _____ Initials _____		STATE OR COUNTRY GERMANY	SHEETS DRAWING 1	TOTAL CLAIMS 27	INDEPENDENT CLAIMS 2
ADDRESS 021005					
TITLE Proton-conducting polymer membrane comprising sulfonic acid-containing polyazoles, and use thereof in fuel cells					
FILING FEE RECEIVED 1380	FEES: Authority has been given in Paper No. _____ to charge/credit DEPOSIT ACCOUNT No. _____ for following:		<input type="checkbox"/> All Fees <input type="checkbox"/> 1.16 Fees (Filing) <input type="checkbox"/> 1.17 Fees (Processing Ext. of time) <input type="checkbox"/> 1.18 Fees (Issue) <input type="checkbox"/> Other _____ <input type="checkbox"/> Credit		

09/949,575

- 2 -

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Amendments to the Claims

Please amend Claims 26, 48 and 51. The Claim Listing below will replace all prior versions of the claims in the application:

Claim Listing

1-25. (Cancelled)

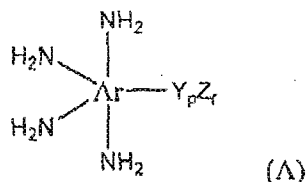
26. (Currently Amended) A proton-conducting polymer membrane which comprises polyazoles containing sulfonic acid groups and is obtainable by a process comprising the steps:

- A) mixing one or more ^①aromatic or heteroaromatic tetraamino compounds with one or more ^②aromatic or heteroaromatic carboxylic acids or derivatives thereof which contain at least two acid groups per carboxylic acid monomer, with at least part of the tetraamino compounds or the carboxylic acids comprising at least one sulfonic acid group, in polyphosphoric acid to form a solution or dispersion[[.]] or mixing of one or more aromatic or heteroaromatic diaminocarboxylic acids, of which at least part comprises sulfonic acid groups, in polyphosphoric acid to form a solution or dispersion;
- B) optionally heating the solution or dispersion obtained according to step A) under inert gas to temperatures of up to 325°C to form polyazole polymers;
- C) applying a layer using the mixture from step A) or B) to a support, thus forming a membrane on the support; and
- D) partially hydrolyzing the polyphosphoric acid moieties of the membrane from step C) until the membrane is self-supporting.

27. (Previously Presented) The membrane of Claim 26, characterized in that the mixture prepared in step A) comprises aromatic or heteroaromatic tetraamino compounds of the formula (A):

09/949,575

- 3 -

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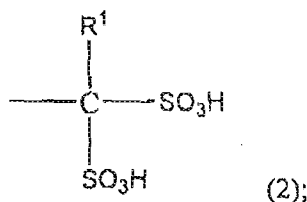
L15

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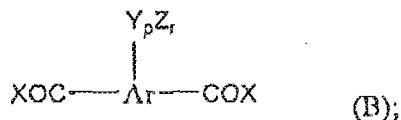
- Ar is an aromatic or heteroaromatic group;
- Y is a bond or a group having from 1 to 20 carbon atoms;
- p is an integer from 1 to 4 and represents the number of bonds or groups Y via which the group Z is bound to the group Ar;
- r is an integer from 1 to 4 and represents the number of groups Z which are bound to the group Y or, if Y is a bond, to the aromatic or heteroaromatic group Ar; and
- Z is a group of the general formula (1):



or the general formula (2):

wherein R¹ is a hydrogen atom or a group having from 1 to 20 carbon atoms.

28. (Previously Presented) The membrane of Claim 26, characterized in that the mixture prepared in step A) comprises aromatic or heteroaromatic carboxylic acids of the formula (B):



L19

wherein

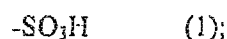
- Ar is an aromatic or heteroaromatic group;

09/949,575

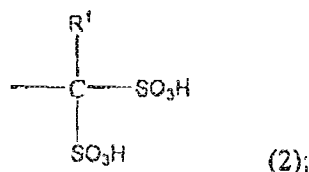
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- 4 -

- X is a halogen atom or a group of the formula OR^2 , where R^2 is a hydrogen atom or a group having from 1 to 20 carbon atoms;
- Y is a bond or a group having from 1 to 20 carbon atoms;
- p is an integer from 1 to 4 and represents the number of bonds or groups Y via which the group Z is bound to the group Ar;
- r is an integer from 1 to 4 and represents the number of groups Z which are bound to the group Y or, if Y is a bond, to the aromatic or heteroaromatic group Ar; and
- Z is a group of the general formula (1):

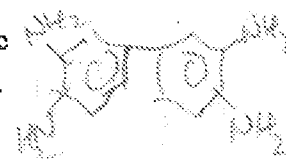


or the general formula (2):



wherein R^1 is a hydrogen atom or a group having from 1 to 20 carbon atoms.

29. (Previously Presented) The membrane of Claim 26, characterized in that the mixture prepared in step A) comprises aromatic or heteroaromatic tetraamino compounds which contain no sulfonic acid groups and aromatic or heteroaromatic carboxylic acids which contain at least one sulfonic acid group.
30. (Previously Presented) The membrane of Claim 26, characterized in that the mixture prepared in step A) comprises 3,3',4,4'-tetraaminobiphenyl, 2,3,5,6-tetraaminopyridine, or 1,2,4,5-tetraaminobenzene.
31. (Previously Presented) The membrane of Claim 26, characterized in that the mixture prepared in step A) comprises: isophthalic acid; terephthalic acid; phthalic acid; 5-hydroxyisophthalic acid; 4-hydroxyisophthalic acid; 2-hydroxyterephthalic acid; 5-aminoisophthalic acid; 5-N,N-



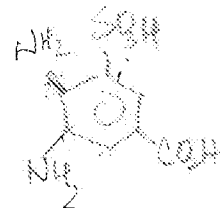
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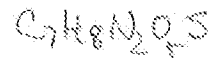
- 5 -

dimethylaminoisophthalic acid; 5-N,N-diethylaminoisophthalic acid; 2,5-dihydroxyterephthalic acid; 2,5-dihydroxyisophthalic acid; 2,3-dihydroxyisophthalic acid; 2,3-dihydroxyphthalic acid; 2,4-dihydroxyphthalic acid; 3,4-dihydroxyphthalic acid; 3-fluorophthalic acid; 5-fluoroisophthalic acid; 2-fluoroterephthalic acid; tetrafluorophthalic acid; tetrafluoroisophthalic acid; tetrafluoroterephthalic acid; 1,4-naphthalenedicarboxylic acid 1,5-naphthalenedicarboxylic acid 2,6-naphthalenedicarboxylic acid 2,7-naphthalenedicarboxylic acid diphenic acid 1,8-dihydroxynaphthalene-3,6-dicarboxylic acid bis(4-carboxyphenyl) ether benzophenone-4,4'-dicarboxylic acid bis(4-dicarboxyphenyl) sulfone; biphenyl-4,4'-dicarboxylic acid; 4-trifluoromethylphthalic acid; 2,2-bis(4-carboxyphenyl)hexafluoropropane; 4,4'-stilbenedicarboxylic acid; 4-carboxycinnamic acid; or their C₁-C₂₀-alkyl esters or C₅-C₁₂-aryl esters, or their acid anhydrides or acid chlorides.

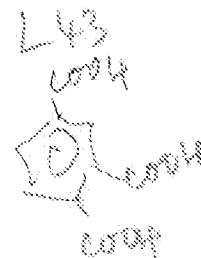
32. (Previously Presented) The membrane of Claim 26, characterized in that the mixture prepared in step A) comprises 2,3-diamino-5-carboxyphenylsulfonic acid, 2,3-diamino-6-carboxyphenylsulfonic acid, and 3,4-diamino-6-carboxyphenylsulfonic acid.



33. (Previously Presented) The membrane of Claim 26, characterized in that the mixture prepared in step A) comprises aromatic tricarboxylic acids, their C₁-C₂₀-alkyl esters or C₅-C₁₂-aryl esters or their acid anhydrides or their acid halides or tetracarboxylic acids, their C₁-C₂₀-alkyl esters or C₅-C₁₂-aryl esters or their acid anhydrides or their acid halides.



34. (Previously Presented) The membrane of Claim 33, characterized in that the mixture prepared in step A) comprises 1,3,5-benzenetricarboxylic acid (trimesic acid); 2,4,5-benzenetricarboxylic acid (trimellitic acid); (2-carboxyphenyl)iminodiacetic acid; 3,5,3'-biphenyltricarboxylic acid; 3,5,4'-biphenyltricarboxylic acid; 2,4,6-pyridinetricarboxylic acid; benzene-1,2,4,5-tetracarboxylic acid; naphthalene-1,4,5,8-tetracarboxylic acid; 3,5,3',5'-



09/949,575

DRAFT

- 6 -

biphenyltetracarboxylic acid; benzophenonetetracarboxylic acid; 3,3',4,4'-biphenyltetracarboxylic acid; 2,2',3,3'-biphenyltetracarboxylic acid; or 1,2,5,6-naphthalenetetracarboxylic acid.

35. (Previously Presented) The membrane of Claim 33, characterized in that the content of tricarboxylic acid or tetracarboxylic acids is in the range of from 0 to 30 mol% based on dicarboxylic acid used.
36. (Previously Presented) The membrane of Claim 35, characterized in that the content of tricarboxylic acid or tetracarboxylic acids is in the range of from 0.1 to 20 mol% based on dicarboxylic acid used.
37. (Previously Presented) The membrane of Claim 36, characterized in that the content of tricarboxylic acid or tetracarboxylic acids is in the range of from 0.5 to 10 mol% based on dicarboxylic acid used.
38. (Previously Presented) The membrane of Claim 26, characterized in that the mixture prepared in step A) comprises heteroaromatic dicarboxylic acids, tricarboxylic acids or tetracarboxylic acids which contain at least one nitrogen, oxygen, sulfur, or phosphorus atom in the aromatics.
39. (Previously Presented) The membrane of Claim 38, characterized in that the mixture prepared in step A) comprises pyridine-2,5-dicarboxylic acid; pyridine-3,5-dicarboxylic acid; pyridine-2,6-dicarboxylic acid; pyridine-2,4-dicarboxylic acid; 4-phenyl-2,5-pyridinedicarboxylic acid; 3,5-pyrazoledicarboxylic acid; 2,6-pyrimidinedicarboxylic acid; 2,5-pyrazinedicarboxylic acid; 2,4,6-pyridinetricarboxylic acid; benzimidazole-5,6-dicarboxylic acid; or their C₁-C₂₀-alkyl esters or C₅-C₁₂-aryl esters or their acid anhydrides or their acid chlorides are used.
40. (Previously Presented) The membrane as claimed in claim 26, characterized in that the mixture prepared in step A) comprises diaminobenzoic acid or its monohydrochloride and dihydrochloride salts.

09/949,575

DRAFT

- 7 -

41. (Previously Presented) The membrane of Claim 26, characterized in that the heating according to step B) is carried out after the formation of a sheet-like structure according to step C).
42. (Previously Presented) The membrane as claimed in claim 26, characterized in that the solution produced in step A) or step B) further comprises dispersed or suspended polymer.
43. (Previously Presented) The membrane of Claim 26, characterized in that the treatment according to step D) is carried out at temperatures in the range of from 0°C to 150°C in the presence of moisture.
44. (Previously Presented) The membrane of Claim 26, characterized in that the treatment of the membrane in step D) is carried out from 10 seconds to 300 hours.
45. (Previously Presented) The membrane of Claim 26, characterized in that the membrane formed after step D) is crosslinked by action of oxygen.
46. (Previously Presented) The membrane of Claim 26, characterized in that a layer having a thickness of from 20 to 4000 μm is produced in step C).
47. (Previously Presented) The membrane of Claim 26, characterized in that the membrane formed after step D) has a thickness of from 15 to 3000 μm .
48. (Currently Amended) An electrode having a proton-conducting polymer coating which is based on polyazoles and is obtainable by a process comprising the steps:
 - A) mixing one or more aromatic or heteroaromatic tetraamino compounds with one or more aromatic or heteroaromatic carboxylic acids or derivatives thereof which contain at least two acid groups per carboxylic acid monomer, with at least part of the tetraamino compounds or the carboxylic acids comprising at least one sulfonic acid group, in polyphosphoric acid to form a solution or dispersion[[.]] ; or mixing of one or more aromatic or

09/949,575

- 8 -

DRAFT

heteroaromatic diaminocarboxylic acids, of which at least part comprises sulfonic acid groups, in polyphosphoric acid to form a solution or dispersion;

- B) optionally heating the solution or dispersion obtained according to step A) under inert gas to temperatures of up to 350°C to form the polyazole polymer;
- C) applying a layer using the mixture from step A) or B) to an electrode, thus forming a membrane on the electrode; and
- D) partially hydrolyzing the polyphosphoric acid moieties of the membrane from step C).

49. (Previously Presented) The electrode of Claim 48, wherein the coating has a thickness of from 2 to 3000 µm.

50. (Previously Presented) A membrane-electrode unit comprising at least one electrode and at least one membrane as claimed in Claim 26.

51. (Currently Amended) A membrane-electrode unit comprising at least one electrode having a proton-conducting polymer coating which is based on polyazoles and is prepared by the following steps:

- A) mixing one or more aromatic or heteroaromatic tetraamino compounds with one or more aromatic or heteroaromatic carboxylic acids or derivatives thereof which contain at least two acid groups per carboxylic acid monomer, with at least part of the tetraamino compounds or the carboxylic acids comprising at least one sulfonic acid group in polyphosphoric acid to form a solution or dispersion[,]; or mixing of one or more aromatic or heteroaromatic diaminocarboxylic acids, of which at least part comprises sulfonic acid groups, in polyphosphoric acid to form a solution or dispersion;

09/949,575

DRAFT

- 9 -

- B) optionally heating the solution or dispersion obtained according to step A) under inert gas to temperatures of up to 350°C to form the polyazole polymer;
- C) applying a layer using the mixture from step A) or B) to an electrode; thus forming a membrane on the electrode; and
- D) partially hydrolyzing the polyphosphoric acid moieties of the electrode membrane from step C) until the membrane is self-supporting, and partially hydrolyzing the polyphosphoric acid moieties of at least one membrane as claimed in Claim 26.

52. (Previously Presented) A fuel cell comprising one or more membrane-electrode units as claimed in Claim 51.

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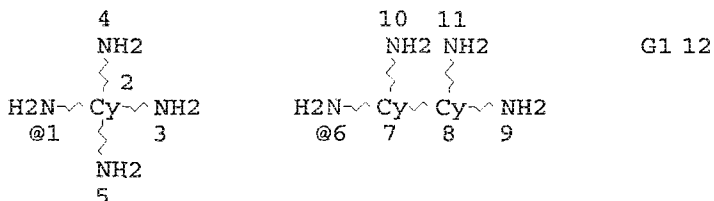
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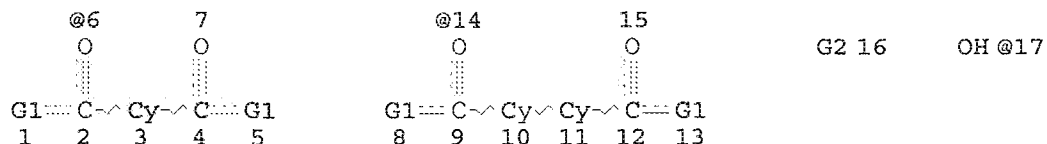
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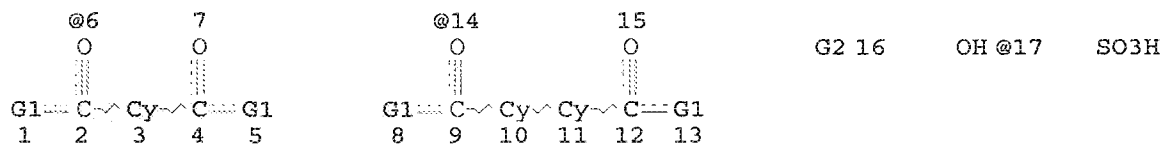
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O~Ak
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20

Page 1-B

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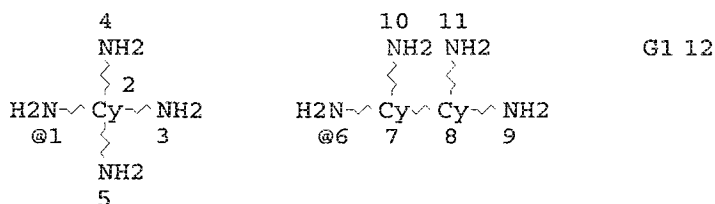
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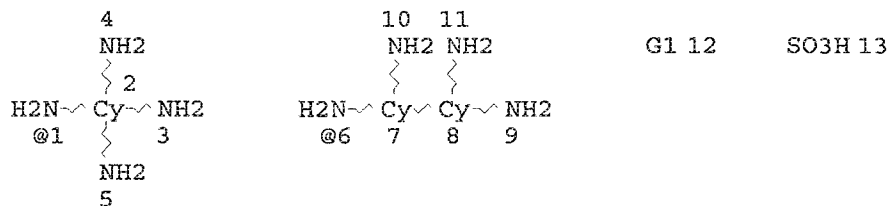
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ACT WAN993A1/A

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 ACT WAN993C30/A

L20 (41) SEA ABB=ON PLU=ON ?TETRAAMINOBIPHENYL?/CNS
 L21 (5) SEA ABB=ON PLU=ON L20 NOT PMS/CI
 L22 (3) SEA ABB=ON PLU=ON L21 AND C12 H14 N4/MF
 L23 (35) SEA ABB=ON PLU=ON ?TETRAAMINOPYRIDINE?/CNS
 L24 (9) SEA ABB=ON PLU=ON L23 NOT PMS/CI
 L25 (8) SEA ABB=ON PLU=ON L24 NOT CTS/CI
 L26 (48) SEA ABB=ON PLU=ON ?TETRAAMINOBENZENE?/CNS
 L27 (6) SEA ABB=ON PLU=ON L26 NOT PMS/CI
 L28 17 SEA ABB=ON PLU=ON L22 OR L25 OR L27

→ Claim 30 compounds

 ACT WAN993C31/A

L29 (1) SEA ABB=ON PLU=ON "ISOPHTHALIC ACID"/CN
 L30 (1) SEA ABB=ON PLU=ON "TEREPHTHALIC ACID"/CN
 L31 (1) SEA ABB=ON PLU=ON "PHTHALIC ACID"/CN
 L32 (1) SEA ABB=ON PLU=ON "5-HYDROXYISOPHTHALIC ACID"/CN
 L33 (1) SEA ABB=ON PLU=ON "4-HYDROXYISOPHTHALIC ACID"/CN
 L34 (1) SEA ABB=ON PLU=ON "2-HYDROXYISOPHTHALIC ACID"/CN
 L35 (1) SEA ABB=ON PLU=ON "2-HYDROXYTEREPHTHALIC ACID"/CN
 L36 (1) SEA ABB=ON PLU=ON "5-AMINOISOPHTHALIC ACID"/CN
 L37 (1) SEA ABB=ON PLU=ON 1,4-NAPHTHALENEDICARBOXYLIC ACID/CN
 L38 9 SEA ABB=ON PLU=ON (L29 OR L30 OR L31 OR L32 OR L33 OR
 L34 OR L35 OR L36 OR L37)

 ACT WAN993C32/A

L39 (90) SEA ABB=ON PLU=ON C7H8N2O5S/MF
 L40 2 SEA ABB=ON PLU=ON L39 AND ?DIAMINO?/CNS

 ACT WAN993C34/A

L41 (1) SEA ABB=ON PLU=ON "TRIMESIC ACID"/CN
 L42 (1) SEA ABB=ON PLU=ON "TRIMELLITIC ACID"/CN
 L43 2 SEA ABB=ON PLU=ON (L41 OR L42)

FILE 'LREGISTRY' ENTERED AT 09:53:21 ON 07 NOV 2007

L44 STR L10
 L45 STR L16

FILE 'REGISTRY' ENTERED AT 09:55:56 ON 07 NOV 2007

L46 1 SEA SUB=L15 SSS SAM L44

D SCA

L47 8 SEA SUB=L15 SSS FUL L44

D SCA

SAV L47 WAN993S1/A

L48 0 SEA ABB=ON PLU=ON L47 NOT CCS/CI

L49 18 SEA SUB=L19 SSS SAM L45

L50 379 SEA SUB=L19 SSS FUL L45

SAV L50 WAN993S2/A

(A) - SO₃H + B

(B) - SO₃H

FILE 'HCAPLUS' ENTERED AT 10:08:10 ON 07 NOV 2007

L51 3062 SEA ABB=ON PLU=ON L15 (A) w/o SO₃H

L52 609 SEA ABB=ON PLU=ON L50 (B) - SO₃H

L53 1 SEA ABB=ON PLU=ON L51 AND L52

D SCA

L54 988 SEA ABB=ON PLU=ON L28 A


```

L55      0 SEA ABB=ON  PLU=ON  L54 AND L52
L56     44 SEA ABB=ON  PLU=ON  AMINE(5A) (?AROMATIC(2A)TETRA)
L57      1 SEA ABB=ON  PLU=ON  2004:307316/AN
L58     219 SEA ABB=ON  PLU=ON  ?AROMATIC?(3A)TETRAAMIN?
L59    19274 SEA ABB=ON  PLU=ON  (?CARBOXYLIC(W)ACID#) (5A)?AROMATIC?
L60     61 SEA ABB=ON  PLU=ON  (L56 OR L58) AND L59
L61      QUE ABB=ON  PLU=ON  SULFONIC? OR SULFONAT?
L62      5 SEA ABB=ON  PLU=ON  L60 AND L61
L63      5 SEA ABB=ON  PLU=ON  L62 NOT L53

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=> fil hcap

FILE 'HCAPLUS' ENTERED AT 10:25:36 ON 07 NOV 2007

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FILE COVERS 1907 - 7 Nov 2007 VOL 147 ISS 20

FILE LAST UPDATED: 6 Nov 2007 (20071106/ED)

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This file contains CAS Registry Numbers for easy and accurate substance identification.

=> d l53 ibib abs hitstr hitind

L53 ANSWER 1 OF 1 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1998:221023 HCAPLUS

DOCUMENT NUMBER: 128:285859

TITLE: Deodorants comprising metallophthalocyanine and its preparation for air treatment

INVENTOR(S): Yamasaki, Yasuhiro; Yamashita, Tatsuto

PATENT ASSIGNEE(S): Orient Chemical Industries, Ltd., Japan

SOURCE: Eur. Pat. Appl., 26 pp.

CODEN: EPXXDW

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 2

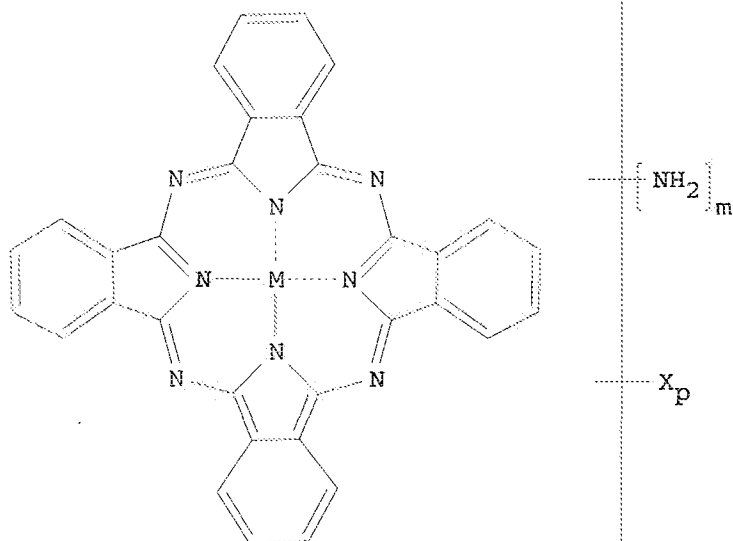
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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EP 834325	A2	19980408	EP 1997-117063	19971001
EP 834325	A3	20000809		
EP 834325	B1	20030702		

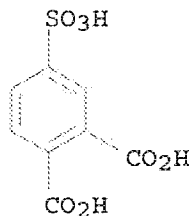
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC,
PT, IE, SI, LT, LV, FI, RO

JP 10101673	A	19980421	JP 1996-261650	199610 02
JP 11056989	A	19990302	JP 1997-216261	199708 11
JP 3816639	B2	20060830		
EP 1354605	A2	20031022	EP 2003-11079	199710 01
EP 1354605	A3	20040512		
R: CH, DE, FR, GB, LI				
US 5883245	A	19990316	US 1997-942358	199710 02
JP 2006150086	A	20060615	JP 2005-357380	200512 12
PRIORITY APPLN. INFO.:			JP 1996-261650	A 199610 02
			JP 1997-216261	A 199708 11
			EP 1997-117063	A3 199710 01

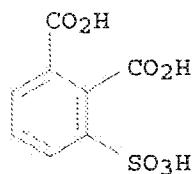
OTHER SOURCE(S): MARPAT 128:285859
GI



- AB The deodorants comprise a water-soluble metallophthalocyanine of formula (I), in which M = a central metal; X = an acidic group or alkali metal salt; m = 1-15, p = 1-15, but m + p ≤ 16. The deodorants are durable and useful for treating odorous air or gases containing aldehydes.
- IT 89-08-7, 4-Sulfophthalic acid 67892-43-7,
3-Sulfophthalic acid
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(deodorants comprising metallophthalocyanine and its preparation for air treatment)
- RN 89-08-7 HCAPLUS
- CN 1,2-Benzenedicarboxylic acid, 4-sulfo- (CA INDEX NAME)

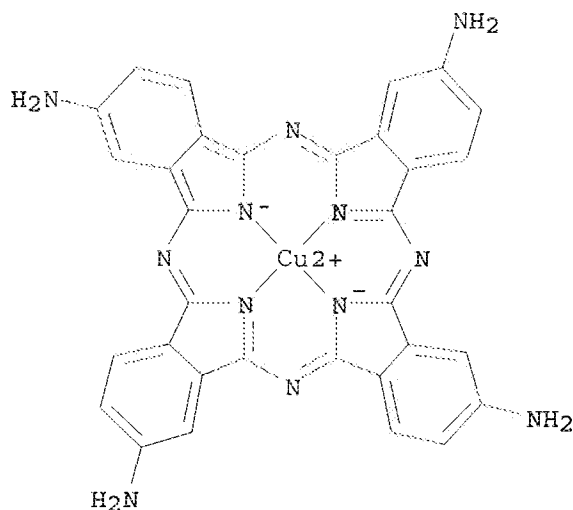


- RN 67892-43-7 HCAPLUS
- CN 1,2-Benzenedicarboxylic acid, 3-sulfo- (CA INDEX NAME)



B-SQH

IT 14654-63-8P
 RL: SPN (Synthetic preparation); PREP (Preparation)
 (deodorants comprising metallophthalocyanine and its preparation for
 air treatment)
 RN 14654-63-8 HCAPLUS
 CN Copper, [29H,31H-phthalocyanine-2,9,16,23-tetraminato(2-)-
 κN29,κN30,κN31,κN32]-, (SP-4-1)- (CA INDEX
 NAME)



IC ICM A61L009-01
 ICS C09B047-04
 CC 59-2 (Air Pollution and Industrial Hygiene)
 IT 57-13-6, Urea, processes 67-56-1, Methanol, processes 85-41-6,
 Phthalimide 88-96-0, Phthalamide 88-99-3D, 1,2-
 Benzenedicarboxylic acid, derivs., processes 89-08-7,
 4-Sulfophthalic acid 89-32-7, Pyromellitic anhydride 89-40-7,
 4-Nitrophthalimide 112-49-2, Triglyme 134-08-7, 4-Sulfophthalic
 anhydride 143-24-8, Tetraglyme 552-30-7 603-11-2,
 3-Nitrophthalic acid 603-62-3, 3-Nitrophthalimide 610-27-5,
 4-Nitrophthalic acid 641-70-3, 3-Nitrophthalic anhydride
 1310-58-3, Potassium hydroxide, processes 1313-84-4, Sodium
 sulfide nonahydrate 3839-22-3, o-Cyanobenzoic acid 3839-22-3D,
 salts 5466-84-2, 4-Nitrophthalic anhydride 6015-57-2,
 4-Chloro-5-nitrophthalimide 7647-01-0, Hydrochloric acid,
 processes 7758-89-6, Cuprous chloride 7791-13-1 11098-84-3,
 Ammonium molybdate 12040-57-2, Iron chloride 22411-24-1
 25322-68-3D, Polyethylene glycol, dialkyl ethers 31371-55-8
 67892-43-7, 3-Sulfophthalic acid
 RL: PEP (Physical, engineering or chemical process); PROC (Process)
 (deodorants comprising metallophthalocyanine and its preparation for

air treatment)
 IT 574-93-6DP, 29H,31H-Phthalocyanine, aminotricarboxy-, cobalt derivs.
 574-93-6DP, 29H,31H-Phthalocyanine, dinitrodicarboxy-, cobalt
 derivs. 3317-67-7P 14567-37-4P 14654-63-8P
 28632-29-3P 69934-86-7P 71667-29-3P 97970-32-6P 109207-15-0P
 109710-57-8P
 RL: SPN (Synthetic preparation); PREP (Preparation)
 (deodorants comprising metallophthalocyanine and its preparation for
 air treatment)

=> d 163 ibib abs hitstr hitind 1-5

L63 ANSWER 1 OF 5 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2004:307316 HCAPLUS

DOCUMENT NUMBER: 140:322529

TITLE: Proton-conductive polymer membranes comprising
 sulfonated polyazoles for use in fuel
 cells

INVENTOR(S): Calundann, Gordon; Sansone, Michael; Benicewicz,
 Brian; Choe, Eui Won; Uensal, Oemer; Kiefer,
 Joachim

PATENT ASSIGNEE(S): Celanese Ventures GmbH, Germany

SOURCE: Ger. Offen., 25 pp.

CODEN: GWXXBX

DOCUMENT TYPE: Patent

LANGUAGE: German

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 10246373	A1	20040415	DE 2002-10246373	200210 04
CA 2500784	A1	20040422	CA 2003-2500784	200310 02
WO 2004034499	A2	20040422	WO 2003-EP10904	200310 02
WO 2004034499	A3	20050512		
W: BR, CA, CN, JP, KR, MX, US				
RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR				
EP 1552574	A2	20050713	EP 2003-748106	200310 02
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, FI, RO, CY, TR, BG, CZ, EE, HU, SK				
CN 1720632	A	20060111	CN 2003-80100919	200310 02
JP 2006502265	T	20060119	JP 2004-542401	200310 02
US 2006183012	A1	20060817	US 2005-529993	200504 12

PRIORITY APPLN. INFO.:

DE 2002-10246373

A

200210
04

WO 2003-EP10904

W

200310
02

AB The title membranes are prepared by dissolving precursors for **sulfonated** polyazoles in polyphosphoric acid, heating under inert gases to temps. $\leq 350^\circ$, applying films of the resulting solution to supports, and treating the resulting film until it is self-supporting.

IC ICM B01D071-62
ICS H01M008-02; H01M004-86

CC 38-3 (Plastics Fabrication and Uses)
Section cross-reference(s): 52

ST polyazole **sulfonated** membrane fuel cell; membrane proton conductive fuel cell

IT **Amines**, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(hetero)**aromatic tetra-**, polymers with (hetero)
aromatic polycarboxylic acids;
proton-conductive polymer membranes comprising **sulfonated**
polyazoles for use in fuel cells)

IT **Carboxylic acids**, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(dicarboxylic, (hetero)**aromatic**, polymers with
(hetero)**aromatic tetramines**; proton-conductive polymer membranes
comprising **sulfonated** polyazoles for use in fuel cells)

IT **Sulfonic acids**, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(polyazole derivs.; proton-conductive polymer membranes
comprising **sulfonated** polyazoles for use in fuel cells)

IT Fuel cells
Membranes, nonbiological
(proton-conductive polymer membranes comprising
sulfonated polyazoles for use in fuel cells)

IT Polyphosphoric acids
RL: CPS (Chemical process); PEP (Physical, engineering or chemical
process); PROC (Process)
(proton-conductive polymer membranes comprising
sulfonated polyazoles prepared in polyphosphoric acid)

L63 ANSWER 2 OF 5 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2004:117171 HCAPLUS

DOCUMENT NUMBER: 140:165009

TITLE: Proton-conductive polyazole membranes containing
phosphonic acid group-containing polymers and
their application in fuel cellsINVENTOR(S): Calundann, Gordon; Uensal, Oemer; Kiefer,
Joachim

PATENT ASSIGNEE(S): Celanese Ventures GmbH, Germany

SOURCE: Ger. Offen., 32 pp.

CODEN: GWXXBX

DOCUMENT TYPE: Patent

LANGUAGE: German

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 10235358	A1	20040212	DE 2002-10235358	20020802
CA 2494330	A1	20040219	CA 2003-2494330	20030731
WO 2004015802	A1	20040219	WO 2003-EP8461	20030731
W: BR, CA, CN, JP, KR, MX, US				
RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR				
EP 1527493	A1	20050504	EP 2003-784120	20030731
EP 1527493	B1	20060104		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, FI, RO, CY, TR, BG, CZ, EE, HU, SK				
CN 1675790	A	20050928	CN 2003-818584	20030731
JP 2005534784	T	20051117	JP 2004-526830	20030731
AT 315278	T	20060215	AT 2003-784120	20030731
US 2005244694	A1	20051103	US 2005-522839	20050606
PRIORITY APPLN. INFO.:			DE 2002-10235358	A 20020802
			WO 2003-EP8461	W 20030731

AB The present invention concerns proton-conductive polymer membranes phosphonic acid group-containing polymers, available by a procedure, comprising the steps: (A) mixing one or more aromatic tetra amino compds. with one or more **aromatic carboxylic acids** and/or their esters, which contain at least two acid radicals, or mixing one or more **aromatic** and/or **heteroarom. diaminocarboxylic acids**, in . vinyl-containing phosphonic acids to form a solution and/or a dispersion, (B) heating the solution and/or dispersion from step (A) under inert gas to temps. of $\leq 350^\circ$ to form a polyazole, (C) applying a layer using the mixture in accordance with step (A) and/or (B) on a carrier, and (D) polymerization of the vinyl-containing phosphonic acids existing in the layer from step (C).

IC ICM C08J005-22

ICS H01M008-02; B01D071-58

CC 38-3 (Plastics Fabrication and Uses)

Section cross-reference(s): 52

IT Polymerization

(cyclopolymer.; of **aromatic tetraamino** compds.

with polycarboxylic acids in presence of
vinyl-containing phosphonic acids in manufacture of proton-containing
membranes)

IT Sulfonic acids, uses

RL: IMF (Industrial manufacture); MOA (Modifier or additive use);
TEM (Technical or engineered material use); PREP (Preparation); USES
(Uses)
(polymers; proton-conductive polyazole membranes containing
phosphonic acid-containing vinyl polymers for fuel cells)

L63 ANSWER 3 OF 5 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2004:117170 HCAPLUS

DOCUMENT NUMBER: 140:165008

TITLE: Proton-conductive polyazole membranes containing
polymers having phosphonic acid and
sulfonic acid groups and their
application in fuel cells

INVENTOR(S): Calundann, Gordon; Uensal, Oemer; Kiefer,
Joachim

PATENT ASSIGNEE(S): Celanese Ventures GmbH, Germany

SOURCE: Ger. Offen., 32 pp.

CODEN: GWXXBX

DOCUMENT TYPE: Patent

LANGUAGE: German

FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

PATENT NO. -----	KIND ----	DATE -----	APPLICATION NO. -----	DATE
DE 10235357	A1	20040212	DE 2002-10235357	200208 02
CA 2494530	A1	20040219	CA 2003-2494530	200307 31
WO 2004015803	A1	20040219	WO 2003-EP8462	200307 31
W: BR, CA, CN, JP, KR, MX, US				
RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR				
EP 1527494	A1	20050504	EP 2003-784121	200307 31
EP 1527494	B1	20051228		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, FI, RO, CY, TR, BG, CZ, EE, HU, SK				
CN 1682400	A	20051012	CN 2003-821477	200307 31
JP 2005534785	T	20051117	JP 2004-526831	200307 31
AT 314735	T	20060115	AT 2003-784121	200307 31
US 2005244695	A1	20051103	US 2005-523373	200503 23

PRIORITY APPLN. INFO.: DE 2002-10235356 A 20020802
 DE 2002-10235357 A 20020802
 WO 2003-EP8462 W 20030731

- AB The present invention concerns proton-conductive polymer membranes containing polymers having **sulfonic** acid and phosphonic acid groups, available by a procedure, comprising the steps: (A) mixing one or more aromatic tetra amino compds. with one or more **arom . carboxylic acids** and/or their esters, which contain at least two acid radicals , or mixing one or more **aromatic and/or heteroarom. diaminocarboxylic acids**, in mixts. containing vinyl-containing **sulfonic** acids and vinyl-containing phosphonic acids to form a solution and/or a dispersion, (B) heating the solution and/or dispersion from step (A) under inert gas to temps. of $\leq 350^{\circ}$ to form a polyazole, (C) applying a layer using the mixture in accordance with step (A) and/or (B) on a carrier, and (D) polymerization of the vinyl-containing **sulfonic** acids and vinyl-containing phosphonic acids existing in the layer from step (C).
- IC ICM C08J005-22
 ICS C08L079-00; H01M008-02; B01D071-58
- CC 38-3 (Plastics Fabrication and Uses)
 Section cross-reference(s): 52
- ST proton conductive polyazole membrane fuel cell; vinyl **sulfonic** acid phosphonic acid polymer contg polyazole membrane
- IT Polymerization
 (cyclopolymer.; of **aromatic tetraamino** compds. with **polycarboxylic acids** in presence of vinyl-containing **sulfonic** acids and vinyl-containing phosphonic acids in manufacture of proton-containing membranes)
- IT Polymerization
 (of phosphonic acid-containing vinyl compds. and **sulfonic** acid-containing vinyl compds. in presence of polyazoles in manufacture of proton conductive membranes for fuel cells)
- IT Vinyl compounds, uses
 RL: IMF (Industrial manufacture); MOA (Modifier or additive use); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
 (polymers, **sulfonic** acid- and phosphonic acid-containing; proton-conductive polyazole membranes containing vinyl polymers having phosphonic acid and **sulfonic** acid groups for fuel cells)
- IT **Sulfonic** acids, uses
 RL: IMF (Industrial manufacture); MOA (Modifier or additive use); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
 (polymers; proton-conductive polyazole membranes containing vinyl polymers having phosphonic acid and **sulfonic** acid groups for fuel cells)
- IT Fuel cell electrodes
 Fuel cell separators

- Ionic conductors
Polyelectrolytes
(proton-conductive polyazole membranes containing vinyl polymers having phosphonic acid and **sulfonic** acid groups for fuel cells)
- IT Polybenzimidazoles
Polybenzothiazoles
Polybenzoxazoles
Polyoxadiazoles
Polyquinoxalines
RL: IMF (Industrial manufacture); POF (Polymer in formulation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(proton-conductive polyazole membranes containing vinyl polymers having phosphonic acid and **sulfonic** acid groups for fuel cells)
- IT Polymer blends
RL: TEM (Technical or engineered material use); USES (Uses)
(proton-conductive polyazole membranes containing vinyl polymers having phosphonic acid and **sulfonic** acid groups for fuel cells)
- IT Polymers, uses
RL: IMF (Industrial manufacture); MOA (Modifier or additive use); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(sulfo-containing; proton-conductive polyazole membranes containing vinyl polymers having phosphonic acid and **sulfonic** acid groups for fuel cells)
- IT 13598-36-2DP, Phosphonic acid, vinyl group-containing, polymers
RL: IMF (Industrial manufacture); MOA (Modifier or additive use); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(proton-conductive polyazole membranes containing vinyl polymers having phosphonic acid and **sulfonic** acid groups for fuel cells)
- IT 110-86-1DP, Pyridine, polymers 289-06-5DP, Thiadiazole, polymers
289-95-2DP, Pyrimidine, polymers 25734-65-0P 27233-57-4P
28576-59-2P 32075-68-6P 32109-42-5P, Poly(1H-benzimidazole-2,5-diyl) 42209-07-4P 55861-56-8P 56713-21-4P 82370-43-2P,
Polyimidazole 96926-85-1P 111404-83-2P 111404-85-4P
132937-69-0P 240799-37-5P 268567-69-7P 368871-22-1P
471256-97-0P 471256-98-1P 471256-99-2P 471257-00-8P
471257-01-9P 471257-02-0P 472960-34-2P
RL: IMF (Industrial manufacture); POF (Polymer in formulation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(proton-conductive polyazole membranes containing vinyl polymers having phosphonic acid and **sulfonic** acid groups for fuel cells)

L63 ANSWER 4 OF 5 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2004:117169 HCAPLUS

DOCUMENT NUMBER: 140:165007

TITLE: Proton-conductive polymer membrane based on **sulfonic** acid-containing polymers and their application in fuel cells

PATENT ASSIGNEE(S): Celanese Ventures GmbH, Germany

SOURCE: Ger. Offen., 31 pp.

CODEN: GWXXBX

DOCUMENT TYPE: Patent

LANGUAGE: German
 FAMILY ACC. NUM. COUNT: 2
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 10235356	A1	20040212	DE 2002-10235356	20020802
CA 2494530	A1	20040219	CA 2003-2494530	20030731
WO 2004015803	A1	20040219	WO 2003-EP8462	20030731
W: BR, CA, CN, JP, KR, MX, US RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR				
EP 1527494	A1	20050504	EP 2003-784121	20030731
EP 1527494	B1	20051228		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, FI, RO, CY, TR, BG, CZ, EE, HU, SK				
CN 1682400	A	20051012	CN 2003-821477	20030731
AT 314735	T	20060115	AT 2003-784121	20030731
US 2005244695	A1	20051103	US 2005-523373	20050323
PRIORITY APPLN. INFO.:				
			DE 2002-10235356	A 20020802
			DE 2002-10235357	A 20020802
			WO 2003-EP8462	W 20030731

AB The present invention concerns proton-conductive polymer membranes containing **sulfonic** acid-containing polymers, available by a procedure, comprising the steps: (A) mixing one or more aromatic tetra amino compds. with one or more **aromatic carboxylic acids** and/or their esters, which contain at least two acid radicals, or mixing one or more **aromatic** and/or **heteroarom. diaminocarboxylic acids**, in a vinyl-containing **sulfonic** acid to form a solution and/or a dispersion, (B) heating the solution and/or dispersion from step (A) under inert gas to temps. of $\leq 350^\circ$ to form a polyazole, (C) applying a layer using the mixture in accordance with step (A) and/or (B) on a carrier, and (D) polymerization of the vinyl-containing **sulfonic** acid existing in the layer from step (C).

IC ICM C08J005-22
ICS C08L079-06; H01M008-02; B01D071-58

CC 38-3 (Plastics Fabrication and Uses)
Section cross-reference(s): 52

ST proton conductive polyazole membrane fuel cell; vinyl
sulfonic acid polymer contg polyazole membrane

IT Polymerization
(cyclopolymer.; of **aromatic tetraamino** compds.
with **polycarboxylic acids** in presence of
vinyl-containing **sulfonic acids** in manufacture of
proton-conducting membranes for fuel cells)

IT Polymerization
(of vinyl containing **sulfonic acids** in presence of
polyazoles in manufacture of proton conductive membranes for fuel
cells)

IT Vinyl compounds, uses
RL: IMF (Industrial manufacture); MOA (Modifier or additive use);
TEM (Technical or engineered material use); PREP (Preparation); USES
(Uses)
(polymers, sulfo-containing; proton-conductive polyazole membranes
containing **sulfonic acid-containing vinyl polymers** for fuel
cells)

IT **Sulfonic acids**, uses
RL: IMF (Industrial manufacture); MOA (Modifier or additive use);
TEM (Technical or engineered material use); PREP (Preparation); USES
(Uses)
(polymers; proton-conductive polyazole membranes containing
sulfonic acid-containing vinyl polymers for fuel cells)

IT Fuel cell electrodes
Fuel cell separators
Ionic conductors
Polyelectrolytes
(proton-conductive polyazole membranes containing **sulfonic
acid-containing vinyl polymers** for fuel cells)

IT Polybenzimidazoles
Polybenzothiazoles
Polybenzoxazoles
Polyoxadiazoles
Polyquinoxalines
RL: IMF (Industrial manufacture); POF (Polymer in formulation); TEM
(Technical or engineered material use); PREP (Preparation); USES
(Uses)
(proton-conductive polyazole membranes containing **sulfonic
acid-containing vinyl polymers** for fuel cells)

IT Polymer blends
RL: TEM (Technical or engineered material use); USES (Uses)
(proton-conductive polyazole membranes containing **sulfonic
acid-containing vinyl polymers** for fuel cells)

IT Polymers, uses
RL: IMF (Industrial manufacture); MOA (Modifier or additive use);
TEM (Technical or engineered material use); PREP (Preparation); USES
(Uses)
(sulfo-containing; proton-conductive polyazole membranes containing
sulfonic acid-containing vinyl polymers for fuel cells)

IT 110-86-1DP, Pyridine, polymers 289-06-5DP, Thiadiazole, polymers
289-95-2DP, Pyrimidine, polymers 25734-65-0P 27233-57-4P
28576-59-2P 32075-68-6P 32109-42-5P, Poly(1H-benzimidazole-2,5-
diyl) 42209-07-4P 55861-56-8P 56713-21-4P 82370-43-2P,
Polyimidazole 96926-85-1P 111404-83-2P 111404-85-4P
132937-69-0P 240799-37-5P 268567-69-7P 368871-22-1P

471256-97-0P 471256-98-1P 471256-99-2P 471257-00-8P
 471257-01-9P 471257-02-0P 472960-34-2P
 RL: IMF (Industrial manufacture); POF (Polymer in formulation); TEM
 (Technical or engineered material use); PREP (Preparation); USES
 (Uses)

(proton-conductive polyazole membranes containing sulfonic
 acid-containing vinyl polymers for fuel cells)

L63 ANSWER 5 OF 5 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2004:20744 HCAPLUS

DOCUMENT NUMBER: 140:78247

TITLE: Proton-conducting membranes from
sulfonated polyazoles useful in fuel
 cells

INVENTOR(S): Calundann, Gordon; Sansone, Michael J.; Uensal,
 Oemer; Kiefer, Joachim

PATENT ASSIGNEE(S): Celanese Ventures GmbH, Germany

SOURCE: PCT Int. Appl., 44 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: German

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2004003061	A1	20040108	WO 2003-EP6308	20030614
W: BR, CA, CN, JP, KR, MX, US				
RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR				
DE 10228657	A1	20040115	DE 2002-10228657	20020627
CA 2491239	A1	20040108	CA 2003-2491239	20030614
EP 1519981	A1	20050406	EP 2003-740253	20030614
EP 1519981	B1	20060628		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, FI, RO, CY, TR, BG, CZ, EE, HU, SK				
CN 1697852	A	20051116	CN 2003-820238	20030614
JP 2006507372	T	20060302	JP 2004-516602	20030614
AT 331753	T	20060715	AT 2003-740253	20030614
US 2006057449	A1	20060316	US 2005-519281	20050804
PRIORITY APPLN. INFO.:			DE 2002-10228657	A
				20020627

WO 2003-EP6308

W

200306

14

- AB A proton-conducting polymer membrane based on aromatic polyazoles containing **sulfonic** acid groups covalently linked to the aromatic rings are produced by a process comprising the steps of (a) mixing one or more **tetraamino**-substituted **aromatic** compds. with one or more **aromatic carboxylic acids** or esters, the acids comprising at least two acid groups per monomer mol., or mixing one or more **aromatic** and/or **heteroarom. diaminocarboxylic acids**, with a mixture of polyphosphoric acid and a **sulfonating** agent forming a solution and/or a dispersion, (b) forming a layer of the mixture (a) on a substrate or an electrode, (c) heating the layer under an inert gas to temperature of 340°, preferably to 280°, forming polyazole polymers, and (d) subjecting the membrane to further treatment. The films have excellent chemical and thermal properties and can be used for producing polymer electrolyte membranes for fuel cells. Thus, isophthalic acid (26.948) and 3,3',4,4'-tetraaminobiphenyl (34.74) were added to polyphosphoric acid (83.4% of P2O5, 938.6 g), the mixture was heated at 120° for 2 h, at 150° for 3 h and at 180° for 14 h resulting in a 5%-solution of the polybenzimidazole in polyphosphoric acid. Phosphoric acid (85%, 22.34) and sulfuric acid (96%, 1.66 g) were added into the polybenzimidazole solution (100 g) at 220° over 30 min, the solution was stirred at 220° for 4 h, and applied on a glass substrate at 220° forming a transparent membrane.
- IC ICM C08J005-00
ICS C08J005-22; H01M008-10; H01M004-00; C08G073-00
- CC 38-3 (Plastics Fabrication and Uses)
Section cross-reference(s): 52
- ST **sulfonated** polyazole membrane fuel cell electrode; fuel cell electrode **sulfonated** polybenzimidazole proton conducting film
- IT Lewis bases
RL: RCT (Reactant); RACT (Reactant or reagent)
(complexes with sulfur trioxide, **sulfonating** agents; proton-conducting membranes from **sulfonated** polyazoles useful in fuel cells)
- IT Ionic conductors
(polymeric; proton-conducting membranes from **sulfonated** polyazoles useful in fuel cells)
- IT Electrodes
Fuel cell electrodes
Membranes, nonbiological
Plastic films
Polyelectrolytes
Polymerization
Sulfonation
(proton-conducting membranes from **sulfonated** polyazoles useful in fuel cells)
- IT Polyphosphoric acids
RL: CAT (Catalyst use); USES (Uses)
(proton-conducting membranes from **sulfonated** polyazoles useful in fuel cells)
- IT Polymers, uses
RL: DEV (Device component use); IMF (Industrial manufacture); PREP

(Preparation); USES (Uses)
(**sulfonated**; proton-conducting membranes from
sulfonated polyazoles useful in fuel cells)

IT Polybenzimidazoles
RL: DEV (Device component use); IMF (Industrial manufacture); PRP
(Properties); PREP (Preparation); USES (Uses)
(**sulfonated**; proton-conducting membranes from
sulfonated polyazoles useful in fuel cells)

IT **Sulfonic acids, reactions**
RL: RCT (Reactant); RACT (Reactant or reagent)
(**sulfonating** agents; proton-conducting membranes from
sulfonated polyazoles useful in fuel cells)

IT 7664-38-2, Phosphoric acid, uses
RL: CAT (Catalyst use); USES (Uses)
(proton-conducting membranes from **sulfonated** polyazoles
useful in fuel cells)

IT 25734-65-0DP, **sulfonated** 26101-19-9DP, Isophthalic
acid-3,3',4,4'-tetraaminobiphenyl copolymer, **sulfonated**
RL: DEV (Device component use); IMF (Industrial manufacture); PRP
(Properties); PREP (Preparation); USES (Uses)
(proton-conducting membranes from **sulfonated** polyazoles
useful in fuel cells)

IT 25734-65-0P 26101-19-9P, Isophthalic acid-3,3',4,4'-
tetraaminobiphenyl copolymer
RL: IMF (Industrial manufacture); RCT (Reactant); PREP
(Preparation); RACT (Reactant or reagent)
(proton-conducting membranes from **sulfonated** polyazoles
useful in fuel cells)

IT 7664-93-9, Sulfuric acid, reactions 7790-94-5, Chlorosulfonic acid
RL: RCT (Reactant); RACT (Reactant or reagent)
(**sulfonating** agent; proton-conducting membranes from
sulfonated polyazoles useful in fuel cells)

IT 7446-11-9D, Sulfur trioxide, complexes with Lewis bases
RL: RCT (Reactant); RACT (Reactant or reagent)
(**sulfonating** agents; proton-conducting membranes from
sulfonated polyazoles useful in fuel cells)

REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR
THIS RECORD. ALL CITATIONS AVAILABLE IN
THE RE FORMAT

=>

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 DICTIONARY FILE UPDATES: 6 NOV 2007 HIGHEST RN 952567-23-6

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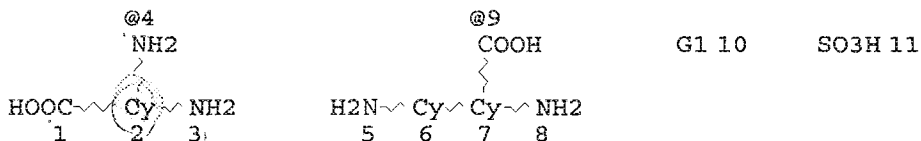
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<http://www.cas.org/support/stngen/stndoc/properties.html>

=> d que stat l3

L1 STR



VAR G1=4/9

NODE ATTRIBUTES:

DEFAULT MLEVEL IS ATOM

GGCAT IS UNS AT 2

GGCAT IS UNS AT 6

GGCAT IS UNS AT 7

DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED

NUMBER OF NODES IS 11

STEREO ATTRIBUTES: NONE

L3 109 SEA FILE=REGISTRY SSS FUL L1

100.0% PROCESSED 40088 ITERATIONS

109 ANSWERS

SEARCH TIME: 00.00.03

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FILE 'LREGISTRY' ENTERED AT 11:30:45 ON 07 NOV 2007

L1 STR

FILE 'REGISTRY' ENTERED AT 11:32:28 ON 07 NOV 2007

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L3      109 SEA SSS FUL L1
          SAV L3 WAN993A3/A
          ACT WAN993C32/A
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L4 (    90) SEA ABB=ON  PLU=ON  C7H8N2O5S/MF
L5      2 SEA ABB=ON  PLU=ON  L4 AND ?DIAMINO?/CNS
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L6      2 SEA ABB=ON  PLU=ON  L3 AND L5
          D SCA
L7      107 SEA ABB=ON  PLU=ON  L3 NOT L6

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FILE 'HCAPLUS' ENTERED AT 11:39:35 ON 07 NOV 2007

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L8      1 SEA ABB=ON  PLU=ON  L6
L9      38 SEA ABB=ON  PLU=ON  L7
L10     19366 SEA ABB=ON  PLU=ON  POLYPHOSPHORIC(A)ACID
L11     0 SEA ABB=ON  PLU=ON  (L8 OR L9) AND L10
L12      QUE ABB=ON  PLU=ON  MIX? OR BLEND? OR ADMIX? OR COMMIX?
          OR IMMIX? OR INTERMIX? OR FORMULAT? OR COMBINAT?
L13     11 SEA ABB=ON  PLU=ON  (L8 OR L9) AND L12
L14     12 SEA ABB=ON  PLU=ON  L13 OR L8
          D QUE STAT L3
L15     2127 SEA ABB=ON  PLU=ON  ?DIAMIN? (2A) CARBOXY?
L16     23047 SEA ABB=ON  PLU=ON  POLYPHOSPHO?
L17      0 SEA ABB=ON  PLU=ON  (L8 OR L9) AND L16
L18     165 SEA ABB=ON  PLU=ON  L15 AND SULFON?
L19      1 SEA ABB=ON  PLU=ON  L18 AND L16
          D SCA
L20      0 SEA ABB=ON  PLU=ON  L19 AND L12

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=> fil hcap

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FILE COVERS 1907 - 7 Nov 2007 VOL 147 ISS 20

FILE LAST UPDATED: 6 Nov 2007 (20071106/ED)

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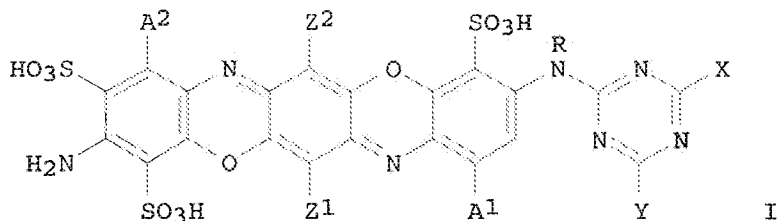
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L8 ANSWER 1 OF 1 HCAPLUS COPYRIGHT 2007 ACS on STN
 ACCESSION NUMBER: 1997:547413 HCAPLUS
 DOCUMENT NUMBER: 127:150206
 TITLE: Asymmetrical triphenodioxazine reactive dyes and their use
 INVENTOR(S): Inoue, Masato; Hada, Junya; Araki, Toshiyuki
 PATENT ASSIGNEE(S): Sumitomo Chemical Co., Ltd., Japan
 SOURCE: Ger. Offen., 26 pp.
 CODEN: GWXXBX
 DOCUMENT TYPE: Patent
 LANGUAGE: German
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 19702537	A1	19970731	DE 1997-19702537	19970124
JP 09202788	A	19970805	JP 1996-10425	19960124
JP 3317120	B2	20020826		
US 5837869	A	19981117	US 1997-788816	19970123
CH 691971	A5	20011215	CH 1997-156	19970123
GB 2309462	A	19970730	GB 1997-1495	19970124
GB 2309462	B	19980429		
US 5977358	A	19991102	US 1998-115593	19980715
PRIORITY APPLN. INFO.:			JP 1996-10425	A 19960124

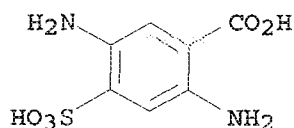
OTHER SOURCE(S): MARPAT 127:150206
 GI



AB The dyes (I; A1 = C1-4-alkyl, C1-4-alkoxy, Br, Cl, CO2H; A2 = H, C1-4-alkyl, C1-4-alkoxy, Br, Cl, CO2H; R = H, optionally substituted lower alkyl; X, Y = halogen, optionally substituted lower alkoxy,

amino optionally containing a vinyl sulfone or potential vinyl sulfone group; Z1, Z2 = H, Br, Cl, Cl-4-alkyl, Cl-4-alkoxy, PhO) are suitable for dyeing or printing of fibrous materials. I have good Cl resistance. Thus, 1,4-phenylenediamine-2,6-disulfonic acid was condensed with 1,4-phenylenediamine-2-methoxy-5-sulfonic acid and chloranil to give a dianilide which was cyclocondensed to provide an asym. triphenodioxazine. This dye was then treated with cyanuric chloride, taurine, and 3-(β -sulfatoethylsulfonyl)aniline to yield a reactive dye (λ_{\max} 595 nm), fast reddish blue on cotton.

IT 193205-93-5, 1,4-Phenylenediamine-2-carboxy-5-sulfonic acid
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (starting material; asym. triphenodioxazine reactive dye preparation and application to cotton)
 RN 193205-93-5 HCAPLUS
 CN Benzoic acid, 2,5-diamino-4-sulfo- (CA INDEX NAME)



IC ICM C09B062-04
 ICS C09B019-02; D06P001-382
 ICA C07D498-04; C07D251-26
 CC 41-5 (Dyes, Organic Pigments, Fluorescent Brighteners, and Photographic Sensitizers)
 Section cross-reference(s): 40
 IT 107-35-7, Taurine 108-77-0, Cyanuric chloride 118-75-2, Chloranil, reactions 488-48-2, Bromanil 675-14-9, Cyanuric fluoride 2494-88-4, 3-(β -Sulfatoethylsulfonyl)aniline 6409-48-9, 1,4-Phenylenediamine-2,6-disulfonic acid 6409-55-8, 1,4-Phenylenediamine-2-methoxy-5-sulfonic acid 100959-37-3, 1,4-Phenylenediamine-2-methyl-5-sulfonic acid 193205-93-5, 1,4-Phenylenediamine-2-carboxy-5-sulfonic acid 193205-94-6, 1,4-Phenylenediamine-2-chloro-5-sulfonic acid 193205-95-7, 1,4-Phenylenediamine-3-methyl-2,6-disulfonic acid
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (starting material; asym. triphenodioxazine reactive dye preparation and application to cotton)

=> d l13 ibib abs hitstr hitind 1-11

L13 ANSWER 1 OF 11 HCAPLUS COPYRIGHT 2007 ACS on STN
 ACCESSION NUMBER: 2007:410767 HCAPLUS
 DOCUMENT NUMBER: 146:403636
 TITLE: Azo reactive dyes and mixtures of fiber-reactive azo dyes, their preparation and their use
 INVENTOR(S): Eichhorn, Joachim; Meier, Stefan; Russ, Werner
 PATENT ASSIGNEE(S): Dystar Textilfarben GmbH & Co Deutschland KG, Germany
 SOURCE: PCT Int. Appl., 158pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2007039573	A2	20070412	WO 2006-EP66911	20060929
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM DE 102005047391 A1 20070412 DE 2005-102005047391 20051005 PRIORITY APPLN. INFO.: DE 2005-102005047391A 20051005				

AB The present invention relates to dye **mixts.**, to processes for their preparation, and to their use for dyeing and printing hydroxyl- and carboxamido-containing materials.

IT 934010-01-2

RL: TEM (Technical or engineered material use); USES (Uses)
(black dye; preparation of azo reactive dyes and **mixts.** of fiber-reactive azo dyes)

RN 934010-01-2 HCAPLUS

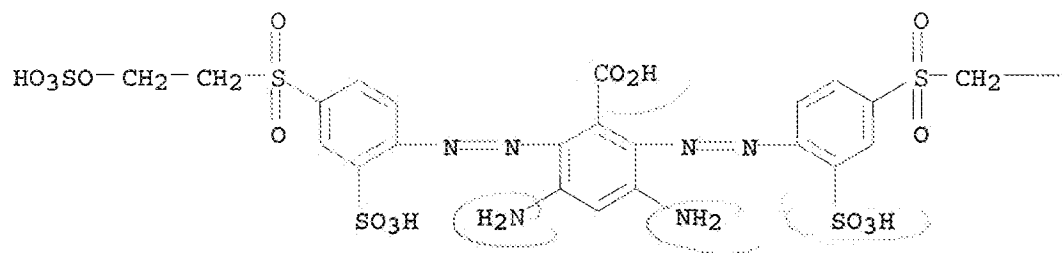
CN Benzoic acid, 3,5-diamino-2,6-bis[2-[2-sulfo-4-[[2-(sulfooxy)ethyl]sulfonyl]phenyl]diazenyl]-, sodium salt (1:5), mixt. with sodium 4-amino-5-hydroxy-3,6-bis[2-[4-[[2-(sulfooxy)ethyl]sulfonyl]phenyl]diazenyl]-2,7-naphthalenedisulfonate (4:1) and sodium 4-amino-3-[2-[4-[[2-(sulfooxy)ethyl]sulfonyl]phenyl]diazenyl]-1-naphthalenesulfonate (2:1) (CA INDEX NAME)

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CRN 934009-78-6

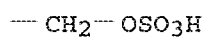
CMF C23 H24 N6 O20 S6 . 5 Na

PAGE 1-A



● 5 Na

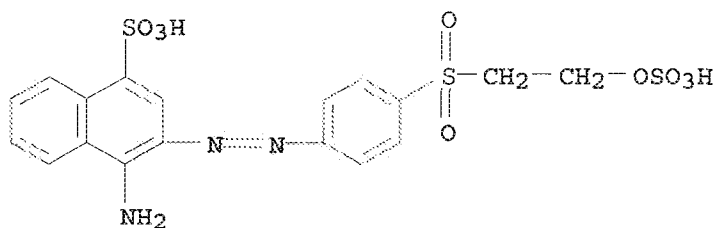
PAGE 1-B



CM 2

CRN 250688-43-8

CMF C18 H17 N3 O9 S3 . 2 Na



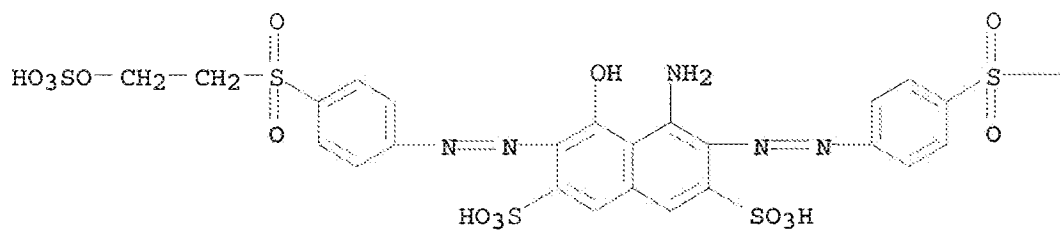
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CM 3

CRN 17095-24-8

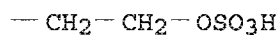
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PAGE 1-A



●4 Na

PAGE 1-B



IT 934009-99-1P

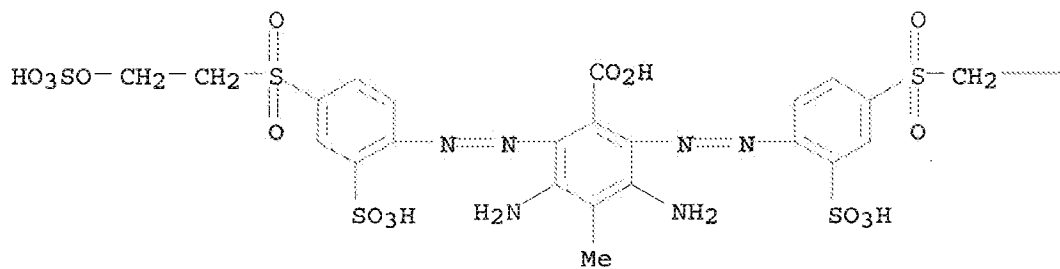
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(dye; preparation of azo reactive dyes and mixts. of fiber-reactive azo dyes)

RN 934009-99-1 HCAPLUS

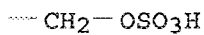
CN Benzoic acid, 3,5-diamino-4-methyl-2,6-bis[2-[2-sulfo-4-[[2-(sulfooxy)ethyl]sulfonyl]phenyl]diazenyl]-, sodium salt (1:5) (CA INDEX NAME)

PAGE 1-A



●5 Na

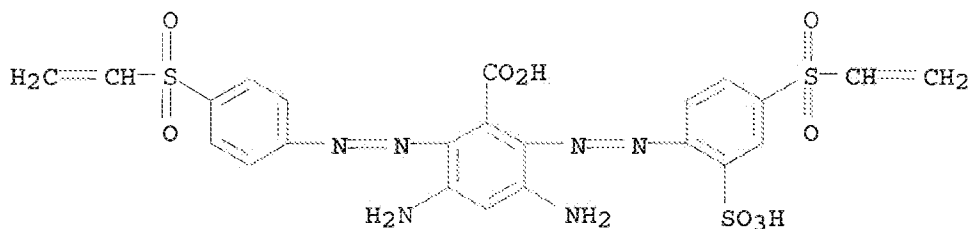
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IT 934010-63-6 934010-66-9

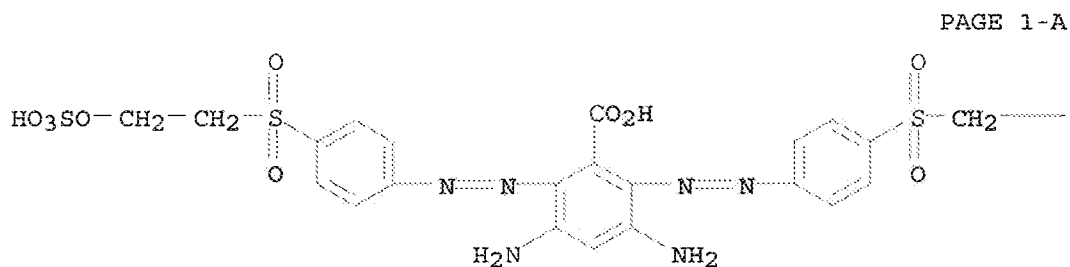
RL: TEM (Technical or engineered material use); USES (Uses)
(dye; preparation of azo reactive dyes and mixts. of
fiber-reactive azo dyes)

RN 934010-63-6 HCAPLUS

CN Benzoic acid, 3,5-diamino-2-[2-[4-(ethenylsulfonyl)phenyl]diazanyl]-
6-[2-[4-(ethenylsulfonyl)-2-sulfophenyl]diazanyl]-, sodium salt
(1:2) (CA INDEX NAME)

● 2 Na

RN 934010-66-9 HCAPLUS

CN Benzoic acid, 3,5-diamino-2,6-bis[2-[4-[[2-(sulfooxy)ethyl]sulfonyl]phenyl]diazanyl]-, sodium salt (1:3) (CA
INDEX NAME)

PAGE 1-A

● 3 Na

PAGE 1-B

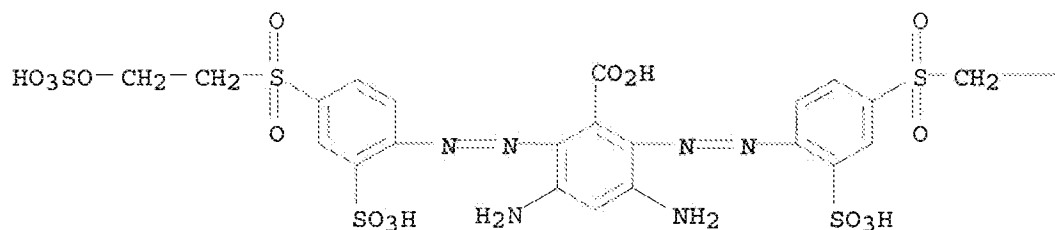
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IT 934009-78-6P

RL: IMF (Industrial manufacture); TEM (Technical or engineered
material use); PREP (Preparation); USES (Uses)
(orange dye; preparation of azo reactive dyes and mixts. of
fiber-reactive azo dyes)

RN 934009-78-6 HCAPLUS
 CN Benzoic acid, 3,5-diamino-2,6-bis[2-[2-sulfo-4-[[2-(sulfooxy)ethyl]sulfonyl]phenyl]diazenyl]-, sodium salt (1:5) (CA INDEX NAME)

PAGE 1-A



●5 Na

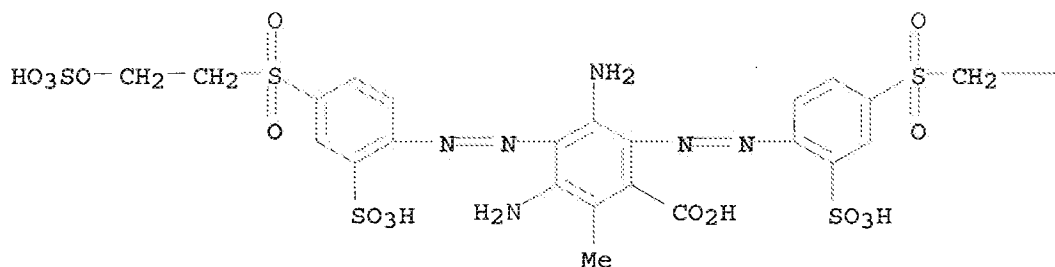
PAGE 1-B

—CH₂—OSO₃H

IT 934009-96-8P
 RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
 (orange-brown dye; preparation of azo reactive dyes and mixts
 . of fiber-reactive azo dyes)

RN 934009-96-8 HCAPLUS
 CN Benzoic acid, 3,5-diamino-2-methyl-4,6-bis[2-[2-sulfo-4-[[2-(sulfooxy)ethyl]sulfonyl]phenyl]diazenyl]-, sodium salt (1:5) (CA INDEX NAME)

PAGE 1-A



●5 Na

PAGE 1-B

—CH₂—OSO₃H

CC 41-3 (Dyes, Organic Pigments, Fluorescent Brighteners, and
Photographic Sensitizers)

ST azo reactive dye mixt fiber

IT Textiles
(cotton; preparation of azo reactive dyes and mixts. of
fiber-reactive azo dyes)

IT Azo dyes
(disazo; preparation of azo reactive dyes and mixts. of
fiber-reactive azo dyes)

IT Azo dyes
Cotton fibers
Reactive dyes
(preparation of azo reactive dyes and mixts. of
fiber-reactive azo dyes)

IT 934009-83-3 934009-84-4 934009-86-6 934009-88-8 934010-00-1
934010-01-2 934010-02-3 934010-04-5 934010-05-6
934010-07-8 934010-09-0 934010-10-3 934010-10-3 934010-12-5
934011-57-1
RL: TEM (Technical or engineered material use); USES (Uses)
(black dye; preparation of azo reactive dyes and mixts. of
fiber-reactive azo dyes)

IT 934009-70-8P
RL: IMF (Industrial manufacture); RCT (Reactant); TEM (Technical or
engineered material use); PREP (Preparation); RACT (Reactant or
reagent); USES (Uses)
(brown diazo dye; preparation of azo reactive dyes and mixts
of fiber-reactive azo dyes)

IT 93951-21-4P 934009-65-1P 934009-66-2P 934009-68-4P
934009-73-1P 934009-74-2P 934009-75-3P 934009-95-7P
RL: IMF (Industrial manufacture); TEM (Technical or engineered
material use); PREP (Preparation); USES (Uses)
(brown dye; preparation of azo reactive dyes and mixts. of
fiber-reactive azo dyes)

IT 910030-59-0P 934009-71-9P
RL: IMF (Industrial manufacture); TEM (Technical or engineered
material use); PREP (Preparation); USES (Uses)
(dark brown dye; preparation of azo reactive dyes and mixts.
of fiber-reactive azo dyes)

IT 208511-91-5P 371921-37-8P 607724-46-9P 934009-93-5P
934009-94-6P 934009-98-0P 934009-99-1P
RL: IMF (Industrial manufacture); TEM (Technical or engineered
material use); PREP (Preparation); USES (Uses)
(dye; preparation of azo reactive dyes and mixts. of
fiber-reactive azo dyes)

IT 13377-58-7 20262-58-2 20298-05-9 35434-51-6 68959-17-1
71902-15-3 72828-73-0 80157-00-2 80315-17-9 84229-70-9
85765-41-9 100850-21-3 114615-97-3 125274-26-2 129009-88-7
173607-51-7 179992-41-7 182926-43-8 183205-49-4 184889-95-0
194279-94-2 250688-43-8 254885-50-2 256227-35-7 259539-79-2
371921-44-7 477841-49-9 477843-29-1 477843-30-4 503155-49-5
536737-09-4 607724-28-7 607724-29-8 607724-34-5 607724-37-8
607724-38-9 607724-42-5 607724-43-6 607724-47-0 607724-51-6

842167-15-1	844491-97-0	850805-16-2	891857-93-5	934009-87-7
934010-13-6	934010-14-7	934010-15-8	934010-16-9	934010-17-0
934010-18-1	934010-19-2	934010-20-5	934010-21-6	934010-22-7
934010-23-8	934010-24-9	934010-25-0	934010-26-1	934010-27-2
934010-28-3	934010-29-4	934010-30-7	934010-31-8	934010-32-9
934010-33-0	934010-34-1	934010-35-2	934010-36-3	934010-37-4
934010-38-5	934010-39-6	934010-40-9	934010-41-0	934010-42-1
934010-43-2	934010-44-3	934010-45-4	934010-46-5	934010-47-6
934010-48-7	934010-49-8	934010-50-1	934010-51-2	934010-52-3
934010-53-4	934010-54-5	934010-55-6	934010-56-7	934010-57-8
934010-58-9	934010-59-0	934010-60-3	934010-61-4	934010-62-5
934010-63-6	934010-64-7	934010-65-8	934010-66-9	
934010-67-0	934010-68-1	934010-69-2	934010-70-5	934010-71-6
934010-72-7	934010-73-8	934010-74-9	934010-75-0	934010-76-1
934010-77-2	934010-78-3	934010-79-4	934010-80-7	934010-81-8
934010-82-9	934010-83-0	934010-84-1	934010-85-2	934010-86-3
934010-87-4	934010-88-5	934010-89-6	934010-90-9	934010-91-0
934010-92-1	934010-93-2	934010-94-3	934010-95-4	934010-96-5
934010-97-6	934010-98-7	934010-99-8	934011-00-4	934011-01-5
934011-02-6	934011-03-7	934011-04-8	934011-05-9	934011-06-0
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934011-22-0	934011-23-1	934011-24-2	934011-25-3	934011-26-4
934011-27-5	934011-28-6	934011-29-7	934011-30-0	934011-31-1
934011-32-2	934011-33-3	934011-34-4	934011-35-5	934011-36-6
934011-37-7	934011-38-8	934011-39-9	934011-40-2	934011-41-3
934011-42-4	934011-43-5	934011-44-6	934011-45-7	934011-46-8
934011-47-9	934011-48-0	934011-49-1	934011-50-4	934011-51-5
934011-53-7	934011-55-9			

RL: TEM (Technical or engineered material use); USES (Uses)
 (dye; preparation of azo reactive dyes and mixts. of
 fiber-reactive azo dyes)

IT 934009-80-0P

RL: IMF (Industrial manufacture); TEM (Technical or engineered
 material use); PREP (Preparation); USES (Uses)
 (golden yellow dye; preparation of azo reactive dyes and mixts
 . of fiber-reactive azo dyes)

IT 84100-03-8P 934009-91-3P 934009-97-9P

RL: IMF (Industrial manufacture); RCT (Reactant); PREP
 (Preparation); RACT (Reactant or reagent)
 (monoazo intermediate dye; preparation of azo reactive dyes and
 mixts. of fiber-reactive azo dyes)

IT 17095-24-8P

RL: IMF (Industrial manufacture); TEM (Technical or engineered
 material use); PREP (Preparation); USES (Uses)
 (navy diazo dye; preparation of azo reactive dyes and mixts.
 of fiber-reactive azo dyes)

IT 607724-40-3P

RL: IMF (Industrial manufacture); TEM (Technical or engineered
 material use); PREP (Preparation); USES (Uses)
 (orange diazo dye; preparation of azo reactive dyes and mixts
 . of fiber-reactive azo dyes)

IT 934009-78-6P

RL: IMF (Industrial manufacture); TEM (Technical or engineered
 material use); PREP (Preparation); USES (Uses)
 (orange dye; preparation of azo reactive dyes and mixts. of
 fiber-reactive azo dyes)

IT 934009-72-0P 934009-77-5P 934009-96-8P

RL: IMF (Industrial manufacture); TEM (Technical or engineered

material use); PREP (Preparation); USES (Uses)
 (orange-brown dye; preparation of azo reactive dyes and **mixts**
 . of fiber-reactive azo dyes)

IT 934009-81-1P

RL: IMF (Industrial manufacture); TEM (Technical or engineered
 material use); PREP (Preparation); USES (Uses)
 (orange-yellow dye; preparation of azo reactive dyes and **mixts**
 . of fiber-reactive azo dyes)

IT 88-44-8, 2-Amino-5-methyl-benzenesulfonic acid 90-20-0,
 1-Amino-8-hydroxynaphthalene-3,6-disulfonic acid 98-44-2,
 2-Aminobenzene-1,4-disulfonic acid 108-45-2, 1,3-Diaminobenzene,
 reactions 108-46-3, Resorcinol, reactions 108-73-6,
 Phloroglucinol 131-27-1, 3-Aminonaphthalene-1,5-disulfonic acid
 141-86-6, 2,6-Diaminopyridine 535-87-5, 3,5-Diaminobenzoic acid
 591-27-5, 3-Aminophenol 2494-89-5, 4-(β -
 Sulfatoethylsulfonyl)aniline 10079-20-6 13244-33-2,
 2-Amino-5-methoxybenzenesulfonic acid 26672-24-2,
 2,5-Dimethoxy-4-(β -sulfatoethylsulfonyl)aniline 42986-22-1,
 2-Amino-5-(β -sulfatoethylsulfonyl)benzenesulfonic acid
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (preparation of azo reactive dyes and **mixts**. of
 fiber-reactive azo dyes)

IT 934009-82-2P

RL: IMF (Industrial manufacture); TEM (Technical or engineered
 material use); PREP (Preparation); USES (Uses)
 (red-brown dye; preparation of azo reactive dyes and **mixts**.
 of fiber-reactive azo dyes)

IT 13479-05-5P 934009-64-0P 934009-67-3P 934009-69-5P

934009-76-4P 934009-79-7P 934009-92-4P

RL: IMF (Industrial manufacture); RCT (Reactant); PREP
 (Preparation); RACT (Reactant or reagent)

(yellow monoazo intermediate dye; preparation of azo reactive dyes and
mixts. of fiber-reactive azo dyes)

L13 ANSWER 2 OF 11 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2006:563359 HCAPLUS

DOCUMENT NUMBER: 145:47239

TITLE: Disazo dye **mixtures** for dyeing
 cellulosic and polyamide fibers

INVENTOR(S): Huang, Huei-Chin; Lee, Sheena; Lee, Sheue-Rong;
 Lai, Bao-Kun; Hsu, Cheng-Hsiang; Tseng, Ya-Chi

PATENT ASSIGNEE(S): Everlight USA, Inc., USA

SOURCE: Eur. Pat. Appl., 33 pp.

CODEN: EPXXDW

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1669415	A1	20060614	EP 2005-25981	200511 29
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, PL, SK, BA, HR, IS, YU				
CN 1781996	A	20060607	CN 2004-10097354	200411

PRIORITY APPLN. INFO.:

CN 2004-10097354

A

29

200411

29

OTHER SOURCE(S): MARPAT 145:47239

AB **Mixts.** containing (A) a disazo dye having 2 arylazo groups in meta relation to each other on a benzene ring, a NH₂ in ortho position to each arylazo group, and, optionally, a CO₂H group in between the arylazo groups and(or) a disazo dye based on a naphthalene derivative having azo groups on the 2 and 7 positions, SO₃H groups on the 3 and 5 positions, an OH on the 1 position, and an amino group on the 6 position and (B) a disazo dye based on a naphthalene derivative having arylazo groups on the 2 and 7 positions, SO₃H groups on the 3 and 6 positions, an OH on the 1 position, and a NH₂ on the 8 position exhibit high fixation and good build-up in dyeing. They are distinguished also by high washing off and a low nylon stain and they are suitable for dyeing and printing of materials containing either cellulose fibers, such as cotton, artificial cotton, linen, and artificial linen, or polyamide fibers, such as wool, silk, and nylon etc. Dyed materials with excellent properties are obtained, showing especially outstanding performance in of washing off, levelness, build-up, wet fastness and light fastness.

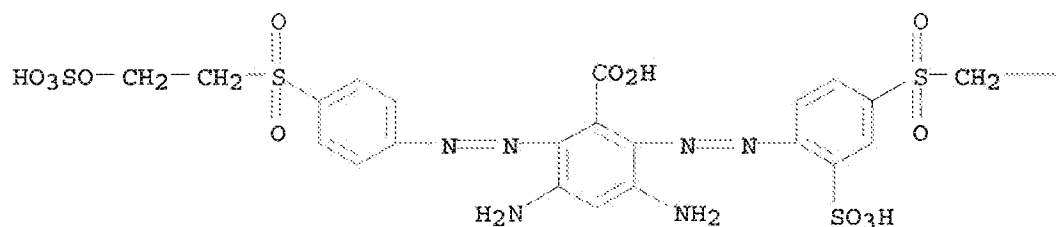
IT 807318-28-1 888015-51-8

RL: TEM (Technical or engineered material use); USES (Uses)
(in disazo dye **mixts.** for dyeing cellulosic and
polyamide fibers)

RN 807318-28-1 HCAPLUS

CN Benzoic acid, 3,5-diamino-2-[2-[4-[[2-(sulfooxy)ethyl]sulfonyl]phenyl]diaz-enyl]-6-[2-[2-sulfo-4-[[2-(sulfooxy)ethyl]sulfonyl]phenyl]diaz-enyl]- (CA INDEX NAME)

PAGE 1-A



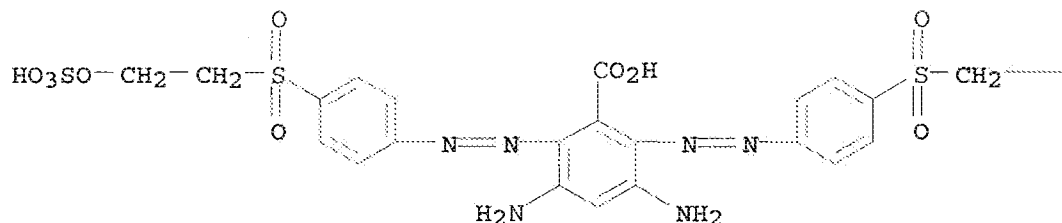
PAGE 1-B

—CH₂—OSO₃H

RN 888015-51-8 HCAPLUS

CN Benzoic acid, 3,5-diamino-2,6-bis[2-[4-[[2-(sulfooxy)ethyl]sulfonyl]phenyl]diaz-enyl]- (CA INDEX NAME)

PAGE 1-A



PAGE 1-B

---CH₂---OSO₃H

CC 40-6 (Textiles and Fibers)
 IT Fibers
 RL: PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process)
 (cellulosic; disazo dye **mixts.** for dyeing cellulosic and polyamide fibers)
 IT Dyeing
 (disazo dye **mixts.** for dyeing cellulosic and polyamide fibers)
 IT Polyamide fibers, processes
 RL: PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process)
 (disazo dye **mixts.** for dyeing cellulosic and polyamide fibers)
 IT 55909-92-7 807318-27-0 **807318-28-1** 807318-39-4
888015-51-8 888015-54-1 888015-55-2 888015-56-3
 RL: TEM (Technical or engineered material use); USES (Uses)
 (in disazo dye **mixts.** for dyeing cellulosic and polyamide fibers)
 REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L13 ANSWER 3 OF 11 HCAPLUS COPYRIGHT 2007 ACS on STN
 ACCESSION NUMBER: 2006:517345 HCAPLUS
 DOCUMENT NUMBER: 145:9627
 TITLE: Dye composition and the use of disazo dye for dyeing fabrics
 INVENTOR(S): Huang, Huei-Chin; Lee, Sheena; Lee, Sheue-Rong; Lai, Bao-Kun; Hsu, Cheng-Hsiang; Tseng, Ya-Chi
 PATENT ASSIGNEE(S): Everlight USA, Inc., USA
 SOURCE: U.S. Pat. Appl. Publ., 20 pp.
 CODEN: USXXCO
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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US 2006112504

A1

20060601

US 2005-136586

200505

25

PRIORITY APPLN. INFO.:

CN 2004-100973549 A

200411

29

OTHER SOURCE(S): MARPAT 145:9627

AB The kinds of dye composition using **mixts.** of disazo dyes have high fixation and good build-up. They are distinguished also by high washing off and a low nylon stain and they are suitable for dyeing and printing of materials containing either cellulose fibers, such as cotton, artificial cotton, linen, and artificial linen, or polyamide fibers, such as wool, silk, and nylon etc. Dyed materials with excellent properties can be obtained, showing especially outstanding performance in of washing off, levelness, build-up, wet fastness and light fastness.

IT 888015-50-7P

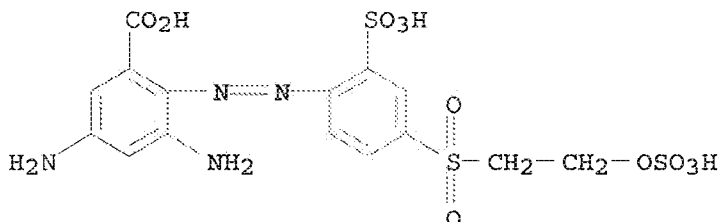
RL: IMF (Industrial manufacture); RCT (Reactant); PREP

(Preparation); RACT (Reactant or reagent)

(intermediate; use of disazo dye **mixture** having good stability and build-up for dyeing fibers)

RN 888015-50-7 HCAPLUS

CN Benzoic acid, 3,5-diamino-2-[[2-sulfo-4-[[2-(sulfooxy)ethyl]sulfonyl]phenyl]azo]- (9CI) (CA INDEX NAME)



IT 807318-28-1P 888015-51-8P 888015-52-9P

888015-53-0P

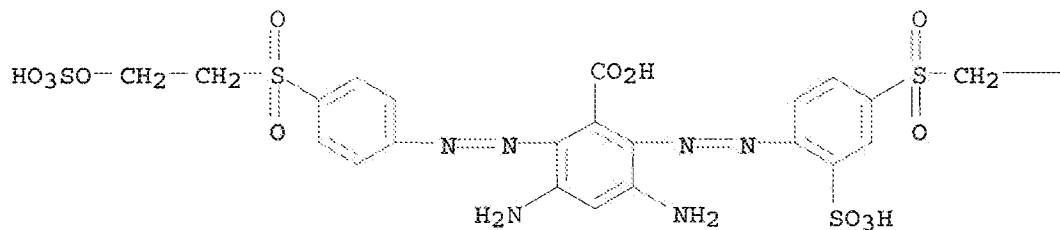
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(use of disazo dye **mixture** having good stability and build-up for dyeing fibers)

RN 807318-28-1 HCAPLUS

CN Benzoic acid, 3,5-diamino-2-[2-[4-[[2-(sulfooxy)ethyl]sulfonyl]phenyl]diazenyl]-6-[2-[2-sulfo-4-[[2-(sulfooxy)ethyl]sulfonyl]phenyl]diazenyl]- (CA INDEX NAME)

PAGE 1-A



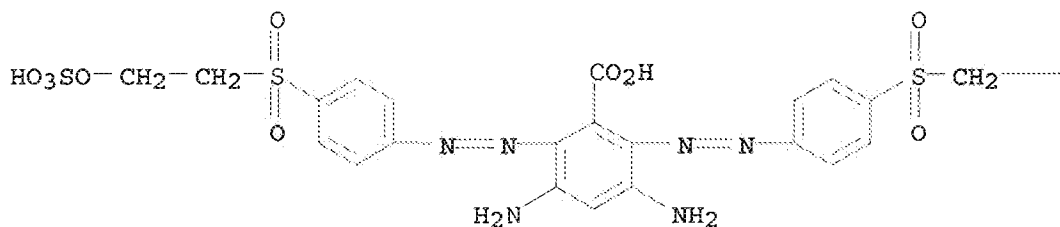
PAGE 1-B

—CH₂—OSO₃H

RN 888015-51-8 HCAPLUS

CN Benzoic acid, 3,5-diamino-2,6-bis[2-[4-[[2-(sulfooxy)ethyl]sulfonyl]phenyl]diazenyl]- (CA INDEX NAME)

PAGE 1-A

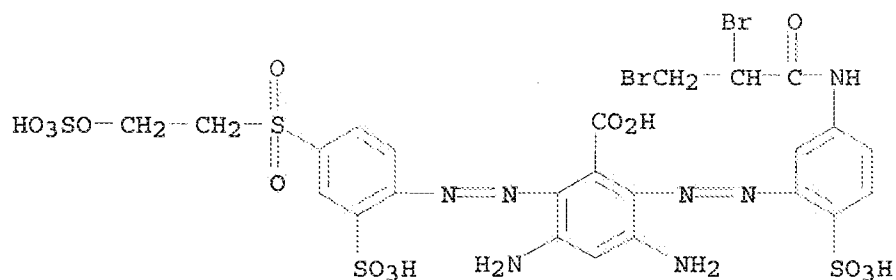


PAGE 1-B

—CH₂—OSO₃H

RN 888015-52-9 HCAPLUS

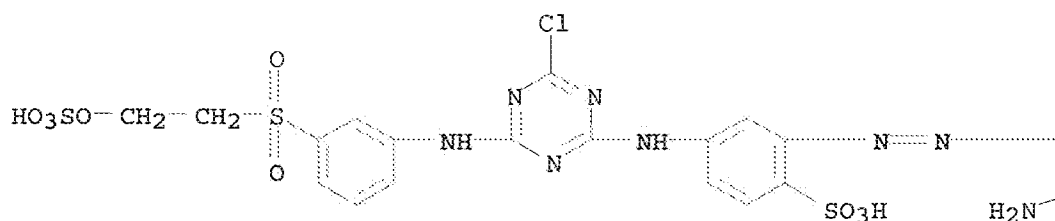
CN Benzoic acid, 3,5-diamino-2-[[5-[(2,3-dibromo-1-oxopropyl)amino]-2-sulfo-phenyl]azo]-6-[[2-sulfo-4-[[2-(sulfooxy)ethyl]sulfonyl]phenyl]azo]- (9CI) (CA INDEX NAME)



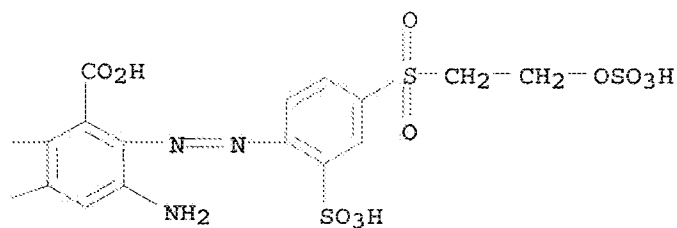
RN 888015-53-0 HCAPLUS

CN Benzoic acid, 3,5-diamino-2-[[5-[[4-chloro-6-[[3-[[2-(sulfooxy)ethyl]sulfonyl]phenyl]amino]-1,3,5-triazin-2-yl]amino]-2-sulfophenyl]azo]-6-[[2-sulfo-4-[[2-(sulfooxy)ethyl]sulfonyl]phenyl]azo]- (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 1-B



INCL 008636000

CC 40-6 (Textiles and Fibers)

Section cross-reference(s): 41

IT Fibers

RL: PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process)

(cellulosic; use of disazo dye mixture having good stability and build-up for dyeing fibers)

IT Azo dyes

(disazo; use of disazo dye mixture having good stability and build-up for dyeing fibers)

IT Yarns

(linen; use of disazo dye mixture having good stability and build-up for dyeing fibers)

IT Screen printing

- (pastes; use of disazo dye mixture having good stability and build-up for dyeing fibers)
- IT Pastes
(screen-printing; use of disazo dye mixture having good stability and build-up for dyeing fibers)
- IT Textile printing
(screen; use of disazo dye mixture having good stability and build-up for dyeing fibers)
- IT Screen printing
(textile; use of disazo dye mixture having good stability and build-up for dyeing fibers)
- IT Cotton fibers
Reactive dyeing
Silk
Textile printing
Wool
(use of disazo dye mixture having good stability and build-up for dyeing fibers)
- IT Polyamide fibers, processes
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process)
(use of disazo dye mixture having good stability and build-up for dyeing fibers)
- IT 535-87-5, 3,5-Diaminobenzoic acid
RL: RCT (Reactant); RACT (Reactant or reagent)
(coupling agent; use of disazo dye mixture having good stability and build-up for dyeing fibers)
- IT 2494-89-5, 1-Aminobenzene-4- β -sulfatoethylsulfone 27685-88-7
42986-22-1, 1-Aminobenzene-2-sulfonic acid-4- β -sulfatoethylsulfone
RL: RCT (Reactant); RACT (Reactant or reagent)
(diazotization; use of disazo dye mixture having good stability and build-up for dyeing fibers)
- IT 77365-67-4P 888015-50-7P
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
(intermediate; use of disazo dye mixture having good stability and build-up for dyeing fibers)
- IT 108-77-0, Cyanuric chloride
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction with aminobenzene sulfatoethylsulfone; use of disazo dye mixture having good stability and build-up for dyeing fibers)
- IT 807318-28-1P 888015-51-8P 888015-52-9P
888015-53-0P
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(use of disazo dye mixture having good stability and build-up for dyeing fibers)
- IT 88-63-1, 2,4-Diaminobenzenesulfonic acid 2494-88-4 7632-00-0, Sodium nitrite
RL: RCT (Reactant); RACT (Reactant or reagent)
(use of disazo dye mixture having good stability and build-up for dyeing fibers)
- IT 55909-92-7 807318-27-0 807318-39-4 888015-54-1 888015-55-2
888015-56-3
RL: TEM (Technical or engineered material use); USES (Uses)
(use of disazo dye mixture having good stability and build-up for dyeing fibers)

L13 ANSWER 4 OF 11 HCAPLUS COPYRIGHT 2007 ACS on STN
 ACCESSION NUMBER: 2006:316374 HCAPLUS
 DOCUMENT NUMBER: 145:9676
 TITLE: Composite black active dye containing blue-,
 red- and yellow-color azo dye components for
 dyeing fabrics
 INVENTOR(S): Wu, Zuwang; Feng, Baicheng; Wang, Zhuan; Lin, Li
 PATENT ASSIGNEE(S): Dalian University of Technology, Peop. Rep.
 China
 SOURCE: Faming Zhuanli Shenqing Gongkai Shuomingshu, 19
 pp.
 CODEN: CNXXEV
 DOCUMENT TYPE: Patent
 LANGUAGE: Chinese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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CN 1730565	A	20060208	CN 2005-10047135	200508 30
PRIORITY APPLN. INFO.:			CN 2005-10047135	200508 30
OTHER SOURCE(S):	MARPAT 145:9676			
GI				

* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT *

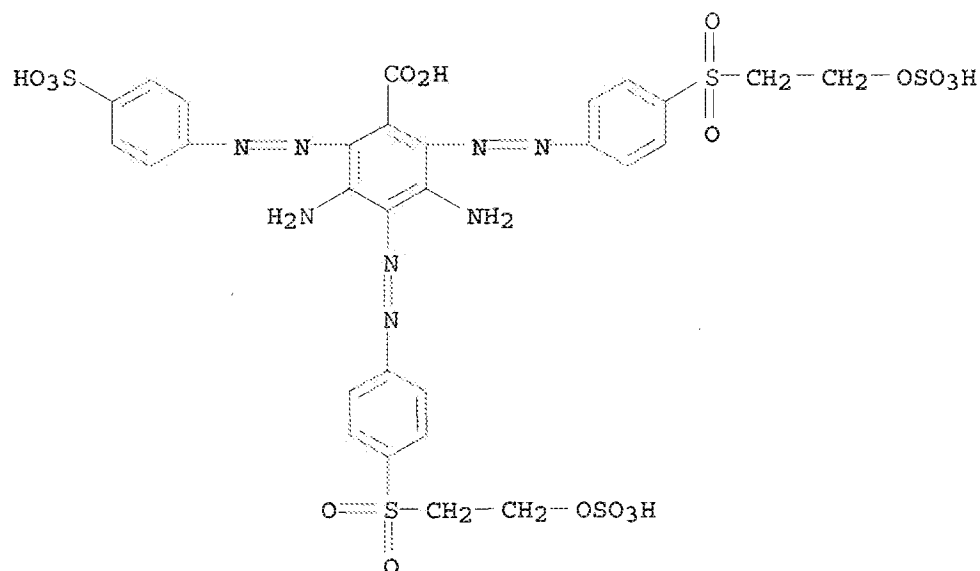
AB The title composite black active dye contains three components having formulas I, II and III, resp. (R1-12 = H, Me, Et, methoxy, ethoxy, sulfonyl, or Cl; X = H or (un)substituted phenyldiazene; Y = vinyl or β -hydroxyethyl sulfate; Z = H, CH₂SO₃M, CH₂CH₂SO₃M, or CH₂COOM; W = CH₂SO₃M, CH₂CH₂SO₃M, or CH₂COOM; M = H, Li, Na or K ion) in weight ratio (50-90):(2-25):(5-30). The composite black active dye having good black degree and uniform dyeability, is useful for dyeing cellulose fiber, protein fiber and polyamide fibers or their blend fabrics.

IT 887376-46-7P
 RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
 (preparation of composite black active dye containing blue-, red- and yellow-color azo dye components for dyeing fabrics)

RN 887376-46-7 HCAPLUS

CN Benzoic acid, 3,5-diamino-2,4-bis[[4-[[2-(sulfooxy)ethyl]sulfonyl]phenyl]azo]-6-[(4-sulfophenyl)azo]-, trisodium salt (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 2-A

● 3 Na

CC 41-3 (Dyes, Organic Pigments, Fluorescent Brighteners, and Photographic Sensitizers)
 Section cross-reference(s): 40
 IT 607724-28-7P 887376-46-7P
 RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
 (preparation of composite black active dye containing blue-, red- and yellow-color azo dye components for dyeing fabrics)

L13 ANSWER 5 OF 11 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2005:962348 HCAPLUS

DOCUMENT NUMBER: 143:231380

TITLE: **Mixtures** of reactive dyes and their use

INVENTOR(S): Hannemann, Klaus

PATENT ASSIGNEE(S): Ciba Specialty Chemicals Holding Inc., Switz.

SOURCE: PCT Int. Appl., 35 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2005080508	A1	20050901	WO 2005-EP50477	20050204

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA,
 CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,
 GE, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP,
 KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW,
 MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD,
 SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ,
 VC, VN, YU, ZA, ZM, ZW
 RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW,
 AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ,
 DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC,
 NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA,
 GN, GQ, GW, ML, MR, NE, SN, TD, TG

EP 1713865 A1 20061025 EP 2005-701641

200502
 04

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC,
 PT, IE, SI, LT, FI, RO, CY, TR, BG, CZ, EE, HU, PL, SK, IS
 CN 1918245 A 20070221 CN 2005-80004404

200502
 04

PRIORITY APPLN. INFO.:

EP 2004-100554

A

200402
 13

WO 2005-EP50477

W

200502
 04

OTHER SOURCE(S): MARPAT 143:231380
 GI

* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT *

AB Dye mixts. comprises at least one dye of formula (I), at least one dye of formula (II), and at least one dye from the group of formulas (III), (IV), (V) and other dyes: wherein R1 is C1-C4 alkoxy, R2 is H, C1-C4 alkyl or C1-C4 alkoxy, R3 and R5 are each independently of the others H or unsubstituted or substituted C1-C4 alkyl, (R4)0-2 denotes from 0 to 2 identical or different substituents from the group halogen, C1-C4 alkyl, C1-C4 alkoxy and C2-C4 alkanoylamino, X1 is halogen, each Y, independently of any other(s), is a -CH(Hal)-CH2-Hal or -C(Hal)=CH2 group and Hal is halogen, and each Z, independently of any other(s), is vinyl or a -CH2-CH2-U radical and U is a group that can be removed under alkaline conditions. The dye mixts. are suitable for dyeing or printing cellulose-containing and polyamide-containing fiber materials and yield dyeings having a high degree of constancy of shade and good fastness properties, while at the same time exhibiting good build-up behavior.

IT 862844-86-8

RL: TEM (Technical or engineered material use); USES (Uses)
 (mixts. of reactive dyes for dyeing or printing
 textiles)

RN 862844-86-8 HCAPLUS

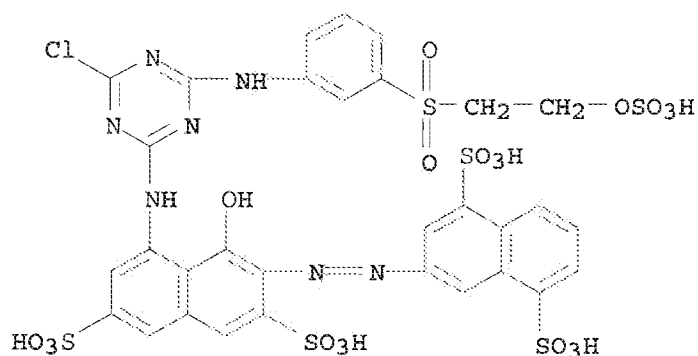
CN 1,5-Naphthalenedisulfonic acid, 3-[[[8-[[[4-chloro-6-[[[3-[[2-(sulfooxy)ethyl]sulfonyl]phenyl]amino]-1,3,5-triazin-2-yl]amino]-1-hydroxy-3,6-disulfo-2-naphthalenyl]azo]-, mixt. with

4-amino-6-[[2,5-dimethoxy-4-[[2-(sulfooxy)ethyl]sulfonyl]phenyl]azo]-5-hydroxy-3-[[4-[[2-(sulfooxy)ethyl]sulfonyl]phenyl]azo]-2,7-naphthalenedisulfonic acid, 4-amino-5-hydroxy-3,6-bis[[4-[[2-(sulfooxy)ethyl]sulfonyl]phenyl]azo]-2,7-naphthalenedisulfonic acid and 3,5-diamino-2,4-bis[[4-[[2-(sulfooxy)ethyl]sulfonyl]phenyl]azo]-6-[(2-sulfophenyl)azo]benzoic acid (9CI) (CA INDEX NAME)

CM 1

CRN 763898-13-1

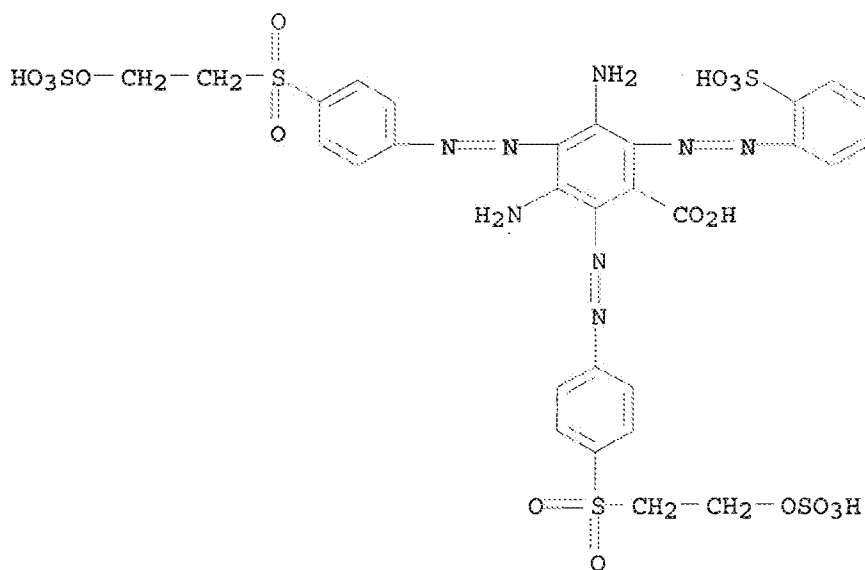
CMF C31 H24 Cl N7 O19 S6



CM 2

CRN 292827-64-6

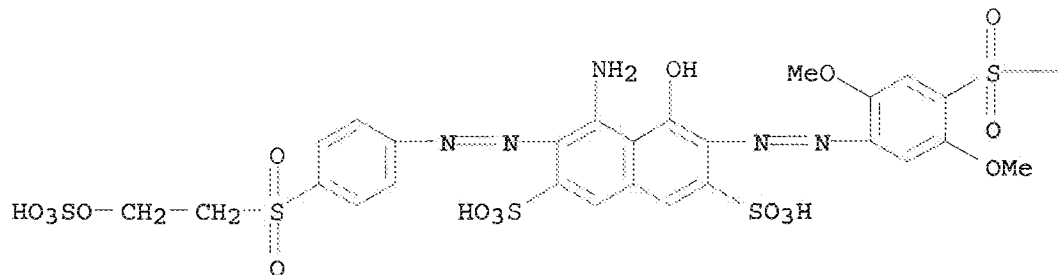
CMF C29 H28 N8 O17 S5



CM 3

CRN 68399-93-9
CMF C28 H29 N5 O21 S6

PAGE 1-A



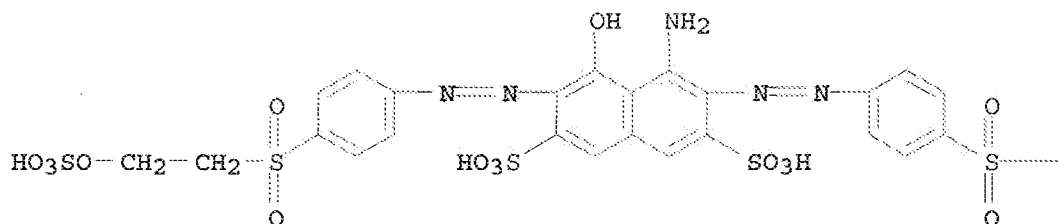
PAGE 1-B

---CH2---CH2---OSO3H

CM 4

CRN 55909-92-7
CMF C26 H25 N5 O19 S6

PAGE 1-A



PAGE 1-B

---CH2---CH2---OSO3H

IC ICM C09B067-22
ICS C09D011-00

CC 41-3 (Dyes, Organic Pigments, Fluorescent Brighteners, and
Photographic Sensitizers)
Section cross-reference(s): 40

ST **mixt** reactive dye dyeing printing cellulose polyamide

fiber
 IT Textiles
 (cotton; **mixts.** of reactive dyes for dyeing or printing
 textiles)
 IT Azo dyes
 (disazo; **mixts.** of reactive dyes for dyeing or printing
 textiles)
 IT Polyamide fibers, miscellaneous
 RL: MSC (Miscellaneous)
 (fabrics; **mixts.** of reactive dyes for dyeing or
 printing textiles)
 IT Inks
 (jet-printing; **mixts.** of reactive dyes for dyeing or
 printing textiles)
 IT Azo dyes
 Reactive dyes
 Textile printing
 (**mixts.** of reactive dyes for dyeing or printing
 textiles)
 IT Textiles
 (wool; **mixts.** of reactive dyes for dyeing or printing
 textiles)
 IT 862844-75-5 862844-76-6 862844-77-7 862844-78-8 862844-79-9
 862844-80-2 862844-81-3 862844-82-4 862844-83-5 862844-84-6
 862844-85-7 **862844-86-8**
 RL: TEM (Technical or engineered material use); USES (Uses)
 (**mixts.** of reactive dyes for dyeing or printing
 textiles)

REFERENCE COUNT: 10 THERE ARE 10 CITED REFERENCES AVAILABLE
 FOR THIS RECORD. ALL CITATIONS AVAILABLE
 IN THE RE FORMAT

L13 ANSWER 6 OF 11 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2004:678362 HCAPLUS

DOCUMENT NUMBER: 141:208506

TITLE: **Mixtures** of bis- and trisazo reactive
 dyes and their use on fabrics

INVENTOR(S): Tzikas, Athanassios; Roentgen, Georg; Klier,
 Herbert

PATENT ASSIGNEE(S): Ciba Specialty Chemicals Holding Inc., Switz.

SOURCE: PCT Int. Appl., 51 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2004069937	A1	20040819	WO 2004-EP676	20040127

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA,
 CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,
 GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP,
 KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW,
 MX, MZ, NA, NI
 RW: BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT,
 BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE,

IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI,
CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

EP 1590406 A1 20051102 EP 2004-705401 200401
27

EP 1590406 B1 20060607
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC,
PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU,
SK

CN 1745147 A 20060308 CN 2004-80003051 200401
27

AT 328967 T 20060615 AT 2004-705401 200401
27

JP 2006519275 T 20060824 JP 2006-501615 200401
27

PT 1590406 T 20061031 PT 2004-705401 200401
27

ES 2264792 T3 20070116 ES 2004-4705401 200401
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US 2006191082 A1 20060831 US 2005-544165 200507
29

IN 2005CN02148 A 20070406 IN 2005-CN2148 200509
05

HK 1082267 A1 20061020 HK 2006-102702 200603
01

PRIORITY APPLN. INFO.: EP 2003-405059 A 200302
05

WO 2004-EP676 W 200401
27

OTHER SOURCE(S): MARPAT 141:208506

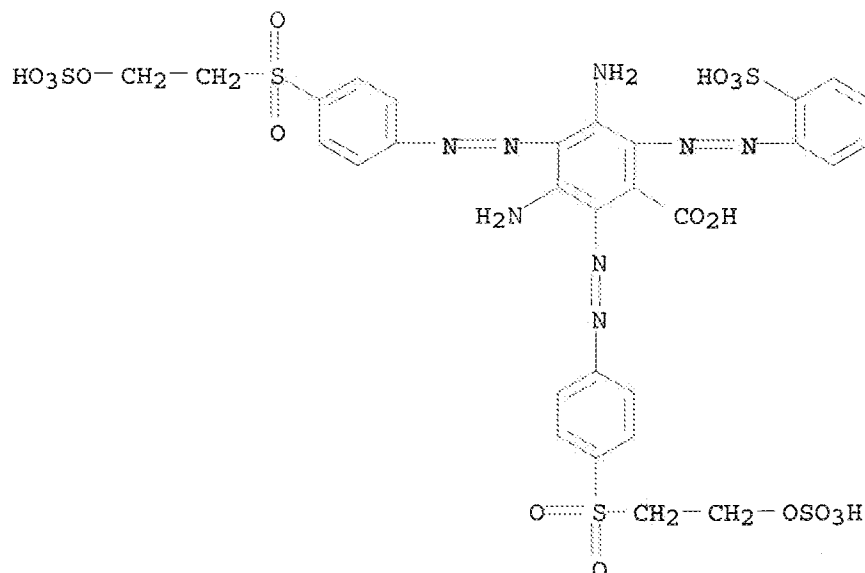
AB Aqueous **mixts.** of reactive bisazo and trisazo dyes providing fast black or navy blue shades with good application properties are disclosed which are suitable for dyeing of jet-printing cellulosic or nitrogen-containing fiber materials. In an example, a **mixt** . of a disazo and a trisazo dye, both having two 2-sulfatoethylsulfonyl groups, was applied to cotton fabric to provide a fast black dyeing.

IT 292827-64-6

RL: TEM (Technical or engineered material use); USES (Uses)
(dye; in **mixts.** of bis- and trisazo reactive dyes for
dyeing and printing of cotton)

RN 292827-64-6 HCAPLUS

CN Benzoic acid, 3,5-diamino-2,4-bis[2-[4-[[2-
(sulfooxy)ethyl]sulfonyl]phenyl]diazanyl]-6-[2-(2-
sulfophenyl)diazanyl]- (CA INDEX NAME)



IC ICM C09B062-01
 ICS C09B067-00; D06P003-02; D06P003-58; D06P003-66
 CC 40-6 (Textiles and Fibers)
 ST reactive polyazo dye mixt cotton black blue printing
 IT Textiles
 (cotton; **mixts.** of bis- and trisazo reactive dyes for
 dyeing and printing of)
 IT Textile printing
 (ink-jet; **mixts.** of bis- and trisazo reactive dyes for
 dyeing and printing of cotton)
 IT Inks
 (jet-printing; **mixts.** of bis- and trisazo reactive dyes
 for dyeing and printing of cotton)
 IT Reactive azo dyes
 Reactive dyeing
 (**mixts.** of bis- and trisazo reactive dyes for dyeing
 and printing of cotton)
 IT Textile printing
 (reactive; **mixts.** of bis- and trisazo reactive dyes for
 dyeing and printing of cotton)
 IT Ink-jet printing
 (textile; **mixts.** of bis- and trisazo reactive dyes for
 dyeing and printing of cotton)
 IT 55909-92-7 **292827-64-6**
 RL: TEM (Technical or engineered material use); USES (Uses)
 (dye; in **mixts.** of bis- and trisazo reactive dyes for
 dyeing and printing of cotton)

L13 ANSWER 7 OF 11 HCAPLUS COPYRIGHT 2007 ACS on STN
 ACCESSION NUMBER: 1989:40638 HCAPLUS
 DOCUMENT NUMBER: 110:40638
 TITLE: Black water-thinned jet-printing inks containing
 trisazo-bisazo dye **mixtures**
 INVENTOR(S): Nagai, Kyofumi; Murakami, Kakuji; Shimada,
 Masaru; Ariga, Tamotsu; Kamimura, Hiroyuki
 PATENT ASSIGNEE(S): Ricoh Co., Ltd., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 7 pp.

DOCUMENT TYPE: CODEN: JKXXAF
 LANGUAGE: Patent
 FAMILY ACC. NUM. COUNT: 1 Japanese
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 63170479	A	19880714	JP 1987-1037	19870108
PRIORITY APPLN. INFO.:			JP 1987-1037	19870108
OTHER SOURCE(S): MARPAT 110:40638				
GI				

* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT *

AB Title anticlogging, storage-stable inks, producing prints with good light and water resistance, comprise ≥ 1 trisazo dye I and/or ≥ 1 of bisazo dye II (R1, R2 = H, alkyl, alkoxy, hydroxyalkyl, halo, CO₂H, CN, SO₃X, carbamoyl, sulfamoyl, Ac, NHAc, cyano; R3 = H, alkyl, halo; R4 = H, alkyl, alkoxy, halo, SO₃X; R5 = H, alkyl, alkoxy, halo, CO₂H, SO₃X; X = H, alkali metal, quaternary ammonium, quaternary phosphonium, organic amine cation; l = 1-2). A composition of I (R1 = CN, R2-5 = H, X = NPr₄, l = 2 at 3,5-position) 2.7, II (R3-5 = H, X = NMe₄, l = 2 at 3,5-position) 0.3, diethylene glycol 15.0, N-methyl-2-pyrrolidone 15.0, Na dehydroacetate 0.2, and H₂O 66.8% was stable when kept at -10 to 70° for 3 mo, anticlogging, and produced black prints of good light and water resistance.

IT 118432-82-9

RL: USES (Uses)

(mixts. with bisazo dyes, jet-printing inks containing, anticlogging, storage-stable, water-thinned)

RN 118432-82-9 HCAPLUS

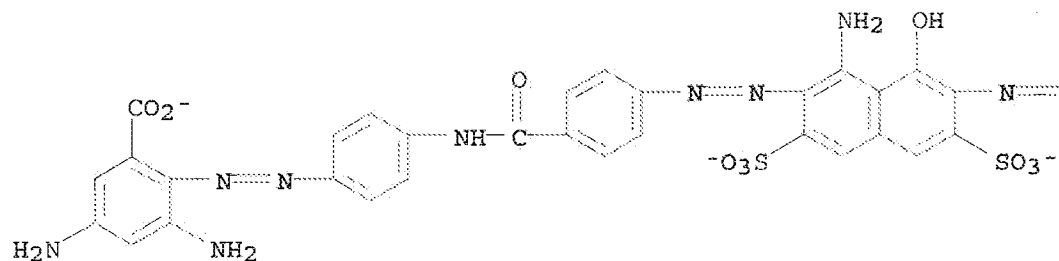
CN Methanaminium, N,N,N-trimethyl-, salt with 3,5-diamino-2-[[4-[[4-[[1-amino-8-hydroxy-7-[[4-(2-hydroxyethyl)phenyl]azo]-3,6-disulfo-2-naphthalenyl]azo]benzoyl]amino]phenyl]azo]benzoic acid (3:1) (9CI) (CA INDEX NAME)

CM 1

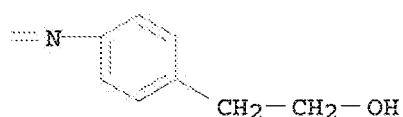
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CMF C38 H29 N10 O11 S2

PAGE 1-A



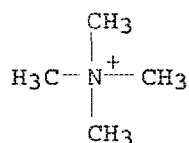
PAGE 1-B



CM 2

CRN 51-92-3

CMF C4 H12 N



IT 118432-94-3 118432-97-6

RL: USES (Uses)

(mixts. with trisazo dyes, jet-printing inks containing, anticlogging, storage-stable, water-thinned)

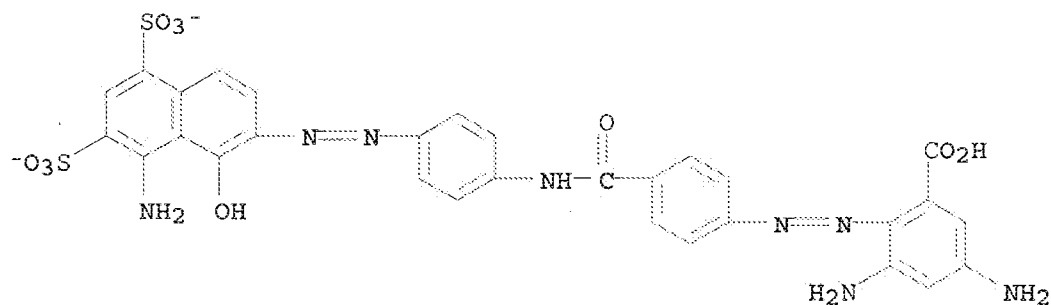
RN 118432-94-3 HCAPLUS

CN Methanaminium, N,N,N-trimethyl-, salt with monosodium
 3,5-diamino-2-[[4-[[[4-[(8-amino-1-hydroxy-5,7-disulfo-2-naphthalenyl)azo]phenyl]amino]carbonyl]phenyl]azo]benzoate (2:1)
 (9CI) (CA INDEX NAME)

CM 1

CRN 118432-93-2

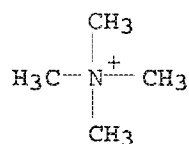
CMF C30 H22 N8 O10 S2



CM 2

CRN 51-92-3

CMF C4 H12 N



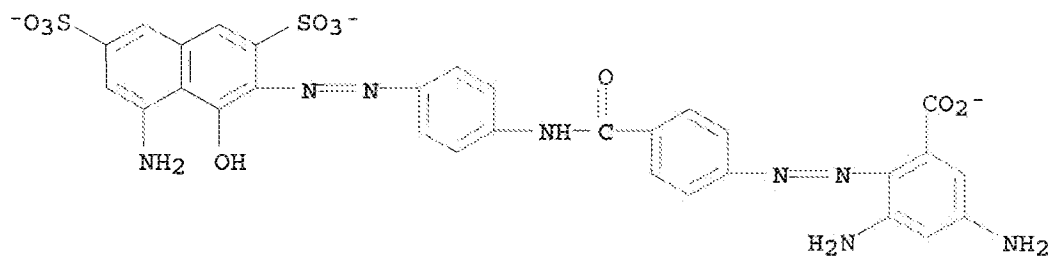
RN 118432-97-6 HCAPLUS

CN Phosphonium, tetramethyl-, salt with 3,5-diamino-2-[[4-[[[4-[(8-amino-1-hydroxy-3,5-disulfo-2-naphthalenyl)azo]phenyl]amino]carbonyl]phenyl]azo]benzoate (3:1) (9CI) (CA INDEX NAME)

CM 1

CRN 118432-96-5

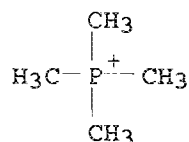
CMF C30 H21 N8 O10 S2



CM 2

CRN 32589-80-3

CMF C4 H12 P



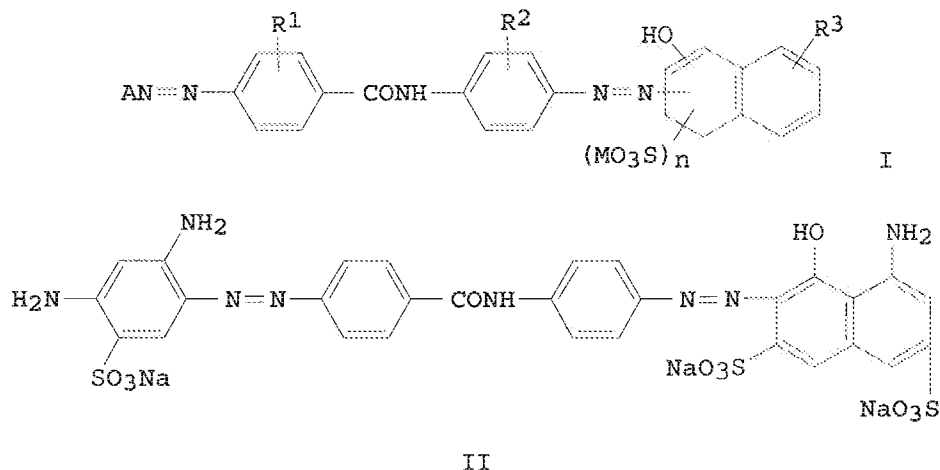
IC ICM C09D011-00
ICS C09B067-26; C09D011-00; C09D011-02
CC 42-12 (Coatings, Inks, and Related Products)
Section cross-reference(s): 41
IT Dyes, azo
(bisazo-trisazo mixts., water-thinned jet-printing inks containing)
IT Water-resistant materials
(jet-printing inks, anticlogging, light-resistant, storage-stable, water-thinned, containing mixts. of trisazo and bisazo dyes)
IT Light-resistant materials
(jet-printing inks, anticlogging, water-resistant, storage-stable, water-thinned, containing mixts. of trisazo and bisazo dyes)
IT Inks
(jet-printing, anticlogging, light- and water-resistant, storage-stable, water-thinned, containing mixts. of trisazo and bisazo dyes)
IT 112828-20-3 116853-01-1 116853-07-7 116853-10-2 118432-80-7
118432-82-9 118432-84-1
RL: USES (Uses)
(mixts. with bisazo dyes, jet-printing inks containing, anticlogging, storage-stable, water-thinned)
IT 118432-86-3 118432-88-5 118432-90-9 118432-92-1
118432-94-3 118432-95-4 118432-97-6
RL: USES (Uses)
(mixts. with trisazo dyes, jet-printing inks containing, anticlogging, storage-stable, water-thinned)

L13 ANSWER 8 OF 11 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1989:40636 HCAPLUS
DOCUMENT NUMBER: 110:40636
TITLE: Water-thinned inks for jet printing
INVENTOR(S): Shimada, Masaru; Murakami, Kakuji; Ariga, Tamotsu; Kamimura, Hiroyuki; Nagai, Kiyofumi
PATENT ASSIGNEE(S): Ricoh Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 6 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 63120776	A	19880525	JP 1986-266763	19861111
PRIORITY APPLN. INFO.:				JP 1986-266763
				198611

11

OTHER SOURCE(S): MARPAT 110:40636
GI



AB The title inks contain ≥ 1 water-soluble dye I (A = aromatic group substituted by NH₂, OH, alkyl, CO₂H, and/or SO₃H; R₁, R₂ = H, Me, halo, SO₃H; R₃ = H, OH, NH₂, substituted NH₂; M = H, alkali metal, quaternary ammonium, amine; n = 1-2). Thus, II 3.0, diethylene glycol 15.0, N-methyl-2-pyrrolidone 15.0, Na dehydroacetate 0.2, and water 66.8% were mixed at .apprx.50° and filtered to give an ink which had good storage stability and nozzle-clogging resistance in jet printing and gave clear images with resistance to water and light.

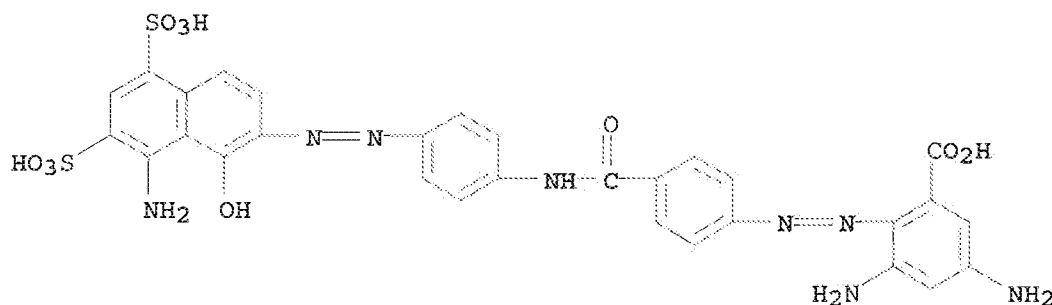
IT 118450-73-0

RL: USES (Uses)

(dye, water-soluble, in jet-printing ink)

RN 118450-73-0 HCAPLUS

CN Benzoic acid, 3,5-diamino-2-[[4-[[[4-[(8-amino-1-hydroxy-5,7-disulfo-2-naphthalenyl)azo]phenyl]amino]carbonyl]phenyl]azo]-, trisodium salt (9CI) (CA INDEX NAME)



● 3 Na

IC ICM C09D011-00
ICS C09D011-00; C09D011-02
CC 42-12 (Coatings, Inks, and Related Products)
IT 118450-72-9 118450-73-0 118450-75-2 118450-76-3
118450-78-5 118450-79-6 118450-80-9
RL: USES (Uses)
(dye, water-soluble, in jet-printing ink)

L13 ANSWER 9 OF 11 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1989:9722 HCAPLUS
DOCUMENT NUMBER: 110:9722
TITLE: Water-based jet-printing ink compositions
INVENTOR(S): Ariga, Tamotsu; Hashimoto, Mitsuru; Shimada, Masaru
PATENT ASSIGNEE(S): Ricoh Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 8 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 63033483	A	19880213	JP 1986-175593	19860728
PRIORITY APPLN. INFO.:			JP 1986-175593	19860728
OTHER SOURCE(S):			CASREACT 110:9722; MARPAT 110:9722	
GI				

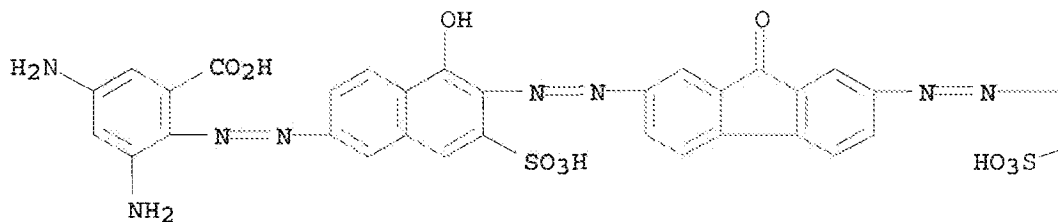
* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT *

AB The title ink compns., giving clear images with good water and light resistance, contain ≥ 1 water-soluble dye I [A = (un)substituted aryl; R1 = OH, (un)substituted amino; M = H, alkali metal, quaternary ammonium, amine; R2 = H, OH, (un)substituted amino; m = 0, 1; n = 1, 2]. 4-O2NC6H4NH2 was diazotized and coupled with 1-amino-8-naphthol-3,6-disulfonic acid Na salt, and the azo intermediate coupled with diazotized 2,7-diamino-9-fluorenone to give II. II 3.0, diethylene glycol 15.0, N-methyl-2-pyrrolidone 15.0, Na dehydroacetate 0.2, and H2O 66.8% were mixed and stirred at approx. 50°, and filtered to give an ink. When the ink was applied to jet printing, a clear image was obtained without nozzle clogging. The image showed fading ratio (after 1-min immersion in water at 30°) 8%, and (after 3-h in a fadeometer at 63°) 6%, vs. 7, and 3, resp., for a control ink prepared using C.I. Direct Black 32 instead of II.

IT 115898-96-9P 117869-96-2P
RL: IMF (Industrial manufacture); PREP (Preparation)
(preparation of, as dye for jet-printing inks)
RN 115898-96-9 HCAPLUS

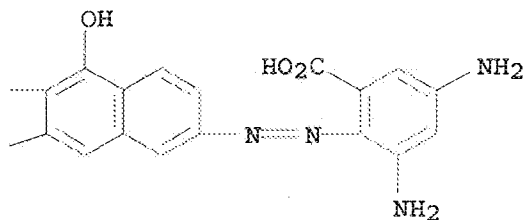
CN Benzoic acid, 2,2'-[(9-oxo-9H-fluorene-2,7-diyl)bis[azo(5-hydroxy-7-sulfo-6,2-naphthalenediyl)azo]]bis[3,5-diamino-, tetralithium salt (9CI) (CA INDEX NAME)

PAGE 1-A



●4 Li

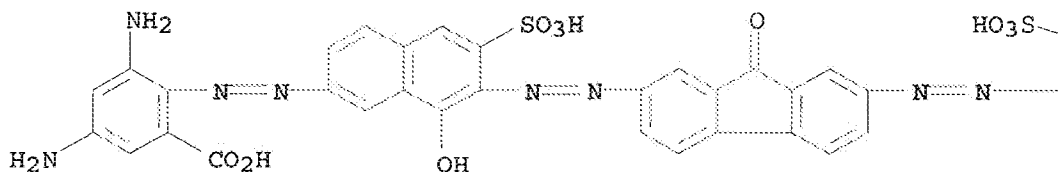
PAGE 1-B



RN 117869-96-2 HCAPLUS

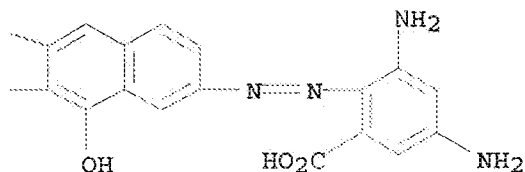
CN Benzoic acid, 2,2'-[(9-oxo-9H-fluorene-2,7-diyl)bis[azo(8-hydroxy-6-sulfo-7,2-naphthalenediyl)azo]]bis[3,5-diamino-, tetrasodium salt (9CI) (CA INDEX NAME)

PAGE 1-A



●4 Na

PAGE 1-B



IC ICM C09D011-00
 ICS C09B067-24; C09D011-00; C09D011-02
 CC 41-3 (Dyes, Organic Pigments, Fluorescent Brighteners, and
 Photographic Sensitizers)
 Section cross-reference(s): 42
 IT 115898-83-4P 115898-84-5P 115898-86-7P 115898-88-9P
 115898-90-3P 115898-92-5P 115898-93-6P 115898-94-7P
 115898-95-8P 115898-96-9P 115898-97-0P 115898-98-1P
 115899-00-8P 117869-96-2P
 RL: IMF (Industrial manufacture); PREP (Preparation)
 (preparation of, as dye for jet-printing inks)

L13 ANSWER 10 OF 11 HCAPLUS COPYRIGHT 2007 ACS on STN
 ACCESSION NUMBER: 1988:551674 HCAPLUS
 DOCUMENT NUMBER: 109:151674
 TITLE: Water-thinned black inks
 INVENTOR(S): Nagai, Kiyofumi; Murakami, Kakuji; Shimada,
 Masaru; Ariga, Tamotsu; Kamimura, Hiroyuki
 PATENT ASSIGNEE(S): Ricoh Co., Ltd., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 7 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 63117077	A	19880521	JP 1986-262001	19861105
PRIORITY APPLN. INFO.:			JP 1986-262001	19861105

OTHER SOURCE(S): MARPAT 109:151674
 GI

* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT *

AB The title inks with excellent storability and nozzle-clogging
 resistance (in case of ink-jet printer) and producing lightfast
 water-resistant images contain mixed azo dyes I-II [R1, R2
 = H, alkyl, alkoxy, hydroxyalkyl, halogen, carboxy, CN, sulfo,
 carbamoyl, sulfamoyl, Ac, AcNH; R3 = H, alkyl, halogen; R4 = H,

alkyl, alkoxy, halogen, sulfo; R5 = H, alkyl, alkoxy, halogen, carboxy, sulfo; X = H, alkali metal, quaternary ammonium, phosphonium, organic amine residue; l = 1, 2; Ar1, Ar2 = (un)substituted phenyl]. A typical ink comprised I [R1 = o-CN; R2 = R3 = R5 = H; R4 = 2'-SO3Na; l = 2 (SO3X at the 3- and 6-positions); X = Pr4N] 2.5, II [azo group bonding at the 6- and 6'-positions; Ar1 and Ar2 = 2,4,5-(H2N)2(Me4NO3S)C6H2; X = Me4N] 0.5, diethylene glycol 15.0, N-methyl-pyrrolidone 15.0, Na dehydroacetate 0.2, and water 66.8%.

IT 116852-93-8

RL: USES (Uses)

(dye mixts. containing, black, for water-thinned inks)

RN 116852-93-8 HCAPLUS

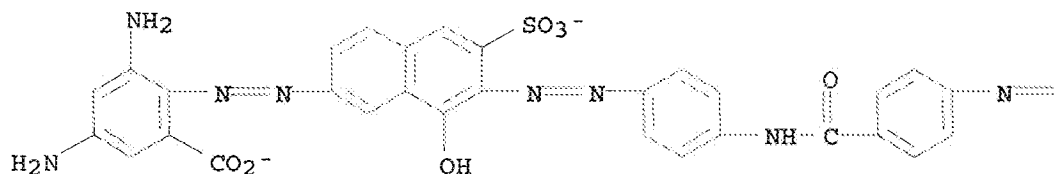
CN Ethanaminium, N,N,N-triethyl-, salt with 3,5-diamino-2-[[7-[[4-[[4-[[7-[(2,4-diamino-6-carboxyphenyl)azo]-1-hydroxy-3-sulfo-2-naphthalenyl]azo]benzoyl]amino]phenyl]azo]-7-hydroxy-6-sulfo-2-naphthalenyl]azo]benzoic acid (4:1) (9CI) (CA INDEX NAME)

CM 1

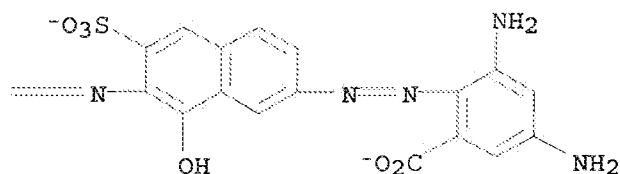
CRN 116852-92-7

CMF C47 H31 N13 O13 S2

PAGE 1-A



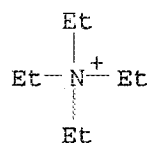
PAGE 1-B



CM 2

CRN 66-40-0

CMF C8 H20 N



IC ICM C09D011-00

ICS C09D011-00; C09D011-02
 CC 42-12 (Coatings, Inks, and Related Products)
 Section cross-reference(s): 41
 IT Dyes, azo
 (mixed, black, for water-thinned inks)
 IT Inks
 (jet-printing, water-thinned, black, mixed azo dyes
 for)
 IT Inks
 (water-thinned, black, mixed azo dyes for)
 IT 116852-91-6 116852-93-8 116852-95-0 116852-97-2
 116852-99-4 116853-01-1 116853-02-2 116853-04-4 116853-06-6
 116853-07-7 116853-10-2 116882-65-6 116906-79-7
 RL: USES (Uses)
 (dye mixts. containing, black, for water-thinned inks)

L13 ANSWER 11 OF 11 HCAPLUS COPYRIGHT 2007 ACS on STN
 ACCESSION NUMBER: 1988:96379 HCAPLUS
 DOCUMENT NUMBER: 108:96379
 TITLE: Water-thinned black ink compositions
 INVENTOR(S): Nagai, Kyofumi; Murakami, Kakuji; Shimada,
 Masaru; Ariga, Tamotsu; Kamimura, Hiroyuki
 PATENT ASSIGNEE(S): Ricoh Co., Ltd., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 7 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 62236874	A	19871016	JP 1986-80152	198604 09
PRIORITY APPLN. INFO.:			JP 1986-80152	198604 09

GI

* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT *

AB The title compns., especially suitable for jet printing, contain ≥ 2 azo dyes chosen from I and II (R1, R2 = H, alkyl, alkoxy, hydroxyalkyl, halogen, carboxy, CN, sulfo, carbamoyl, sulfamoyl; R3 = H, alkyl, halogen; R4, R6 = H, alkyl, alkoxy, halogen, sulfo; R5 = H, alkyl, alkoxy, halogen, carboxy, sulfo; X = H, alkali metal, quaternary ammonium; l = 1-2; R7 = H, alkyl, alkoxy, halogen; R8-11 = H, NH2, NO2, sulfo, halogen, alkyl, CF3, carboxy, carbamoyl, sulfamoyl, CN; m, n = 1-2). A mixture of I [R1 = 2-CN; R2 = R3 = R5 = H; R4 = 2-SO3Na; l = 2 (3,6-disulfo); X = Na] 2.3, II [R8, R11 = 4-CONH2; R6 = R7 = R9 = R10 = H; n = 2 (3,6-disulfo); n = 2 (3,6-disulfo); X = Na] 0.7, diethylene glycol 12.5, N-methyl-2-pyrrolidone 12.5, Na dehydroacetate 0.3, and water 71.7% was adjusted to pH 10.5 with NaOH, heated at 60° for 3 h, and

filtered to give a black ink with excellent storage stability and nozzle clogging resistance, which provided high-quality jet prints with excellent light and water resistance.

IT 112961-02-1

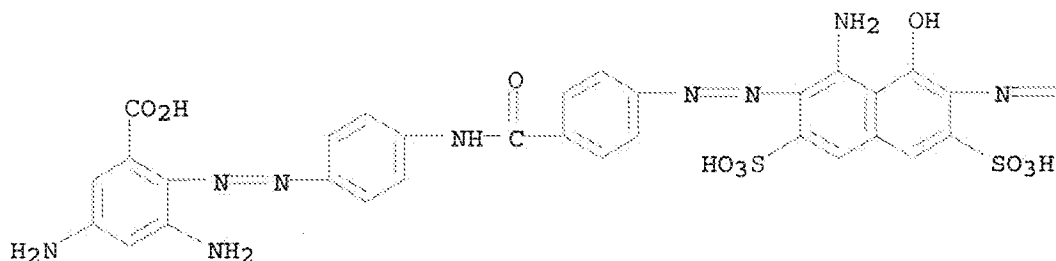
RL: USES (Uses)

(dyes containing, black, for water-thinned inks for jet printing)

RN 112961-02-1 HCAPLUS

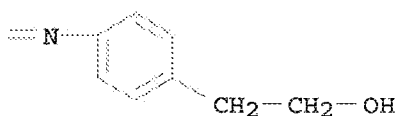
CN Benzoic acid, 3,5-diamino-2-[[4-[[4-[[1-amino-8-hydroxy-7-[[4-(2-hydroxyethyl)phenyl]azo]-3,6-disulfo-2-naphthalenyl]azo]benzoyl]amino]phenyl]azo]-, trisodium salt (9CI) (CA INDEX NAME)

PAGE 1-A



● 3 Na

PAGE 1-B



IC ICM C09D011-00

ICS C09D011-00; C09D011-10; C09D011-16

CC 42-12 (Coatings, Inks, and Related Products)

Section cross-reference(s): 41

IT Dyes, azo

(poly-, mixed, black, for water-thinned inks for jet printing)

IT Inks

(jet-printing, water-thinned, black, light- and water-resistant, polyazo dye mixts. for)

IT 111844-40-7 112828-20-3 112960-98-2 112960-99-3 112961-00-9

112961-01-0 112961-02-1 112961-03-2 112961-05-4

112974-60-4

RL: USES (Uses)

(dyes containing, black, for water-thinned inks for jet printing)

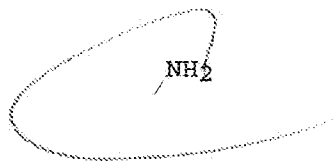
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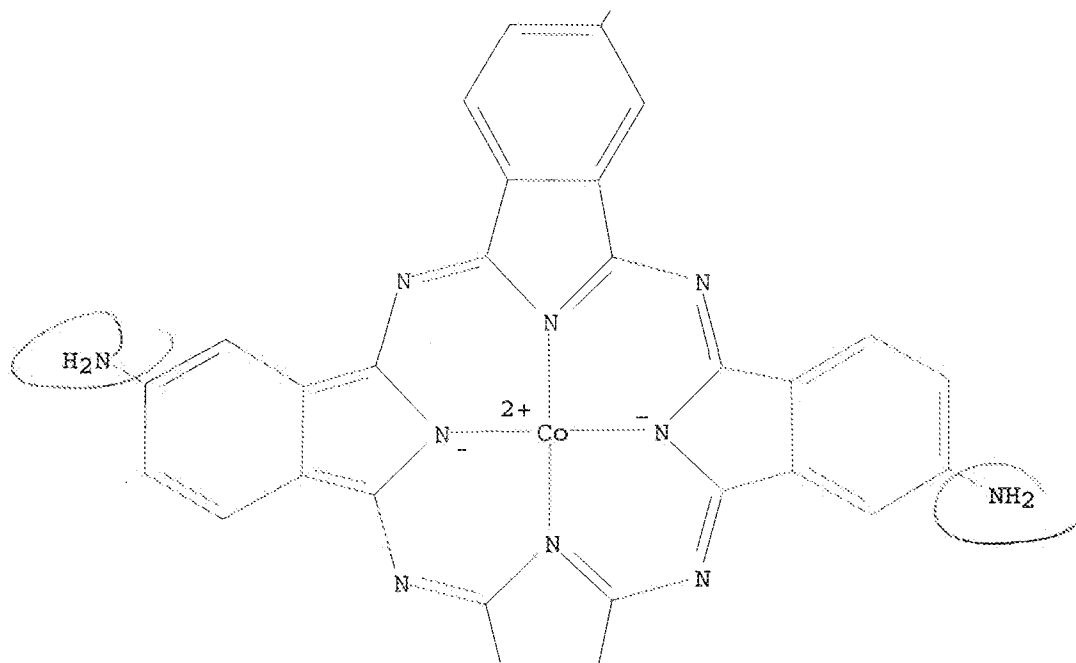
L47 8 ANSWERS REGISTRY COPYRIGHT 2007 ACS on STN
IN Cobaltate(2-), [2,9,16,23-tetraamino-29H,31H-phthalocyanine-C,C-
disulfonato(4-)-N29,N30,N31,N32]- (9CI)
MF C32 H18 Co N12 O6 S2
CI CCS, IDS, COM

PAGE 1-A

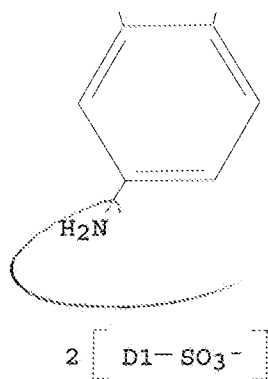
(A) - SO₃H



PAGE 2-A



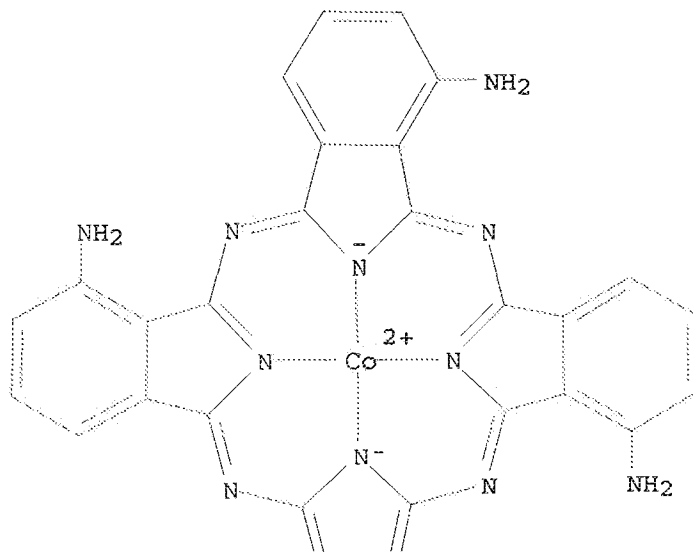
PAGE 3-A



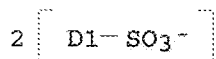
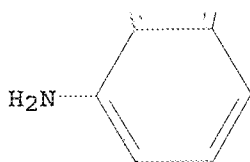
HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1):1

L47 8 ANSWERS REGISTRY COPYRIGHT 2007 ACS on STN
 IN Cobaltate(2-), [1,8,15,22-tetraamino-29H,31H-phthalocyanine-C,C-disulfonato(4-)-N29,N30,N31,N32] - (9CI)
 MF C32 H18 Co N12 O6 S2
 CI CCS, IDS, COM

PAGE 1-A

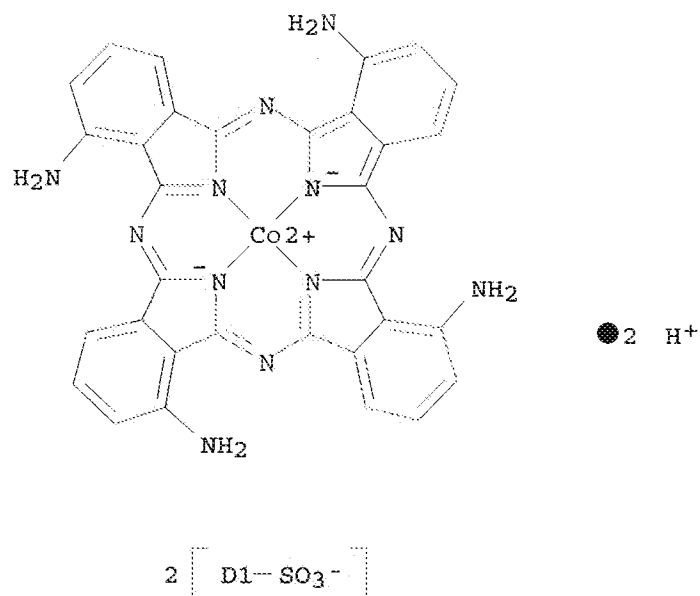


PAGE 2-A



HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1):1

L47 8 ANSWERS REGISTRY COPYRIGHT 2007 ACS on STN
 IN Cobaltate(2-), [1,8,15,22-tetraamino-29H,31H-phthalocyanine-C,C-
 disulfonato(4-)-N29,N30,N31,N32]-, dihydrogen (9CI)
 MF C32 H18 Co N12 O6 S2 . 2 H
 CI CCS, IDS



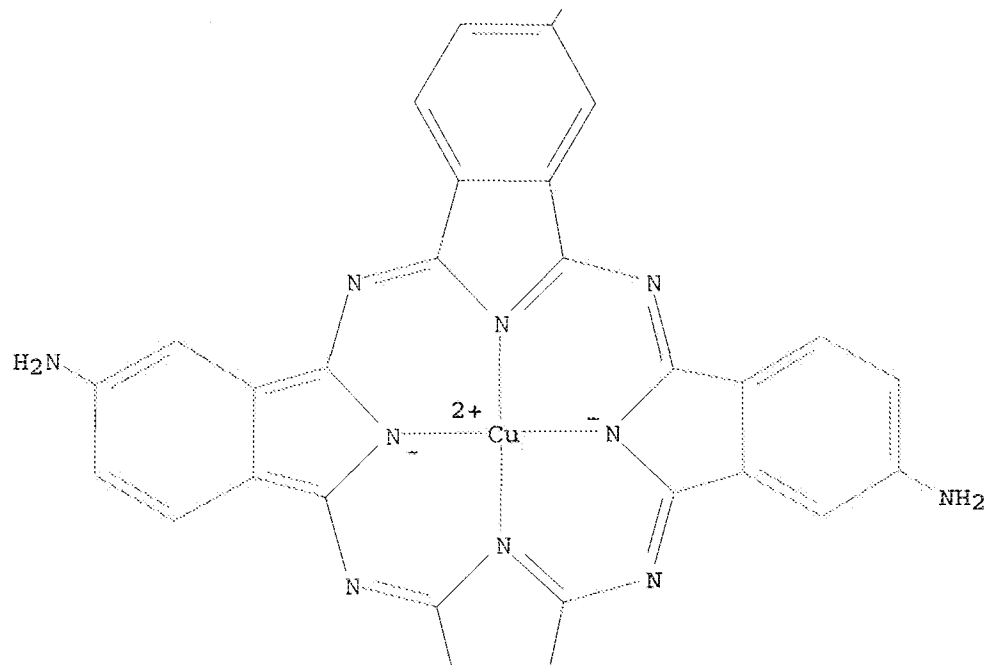
HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1):11

L47 8 ANSWERS REGISTRY COPYRIGHT 2007 ACS on STN
 IN Cuprate(2-), [2,9,16,23-tetraamino-29H,31H-phthalocyanine-C,C-
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 CI CCS, IDS, COM

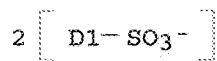
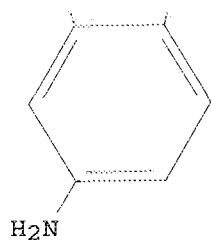
PAGE 1-A

NH₂

PAGE 2-A

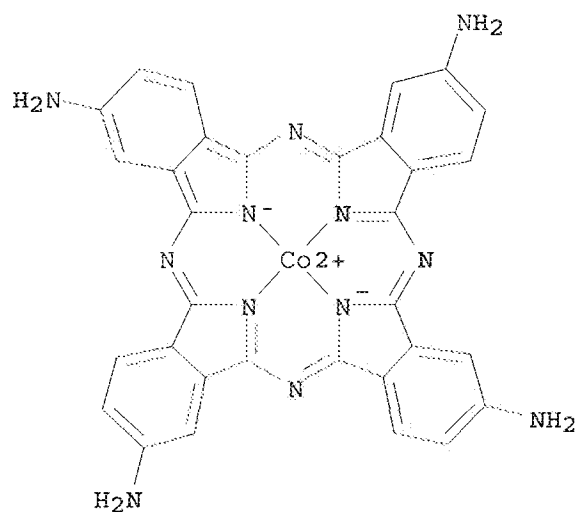


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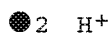
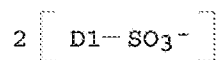


L47 8 ANSWERS REGISTRY COPYRIGHT 2007 ACS on STN
 IN Cobaltate(2-), [2,9,16,23-tetraamino-29H,31H-phthalocyanine-C,C-disulfonato(4-)-N29,N30,N31,N32]-, dihydrogen (9CI)
 MF C32 H18 Co N12 O6 S2 . 2 H
 CI CCS, IDS

PAGE 1-A

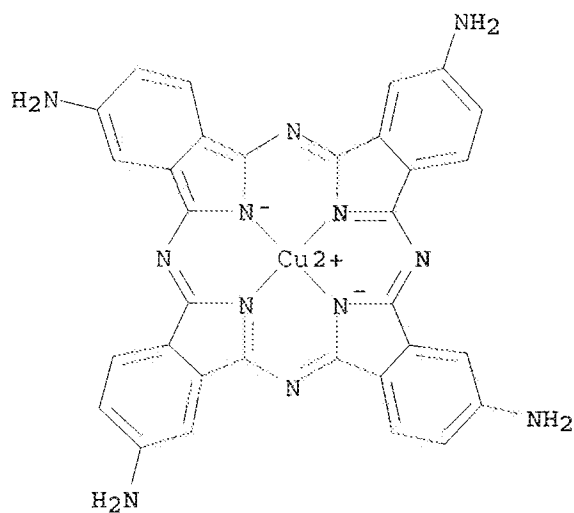


PAGE 2-A

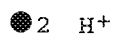
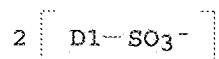


L47 8 ANSWERS REGISTRY COPYRIGHT 2007 ACS on STN
 IN Cuprate(2-), [2,9,16,23-tetraamino-29H,31H-phthalocyanine-C,C-
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 MF C32 H18 Cu N12 O6 S2 . 2 H
 CI CCS, IDS

PAGE 1-A



PAGE 2-A

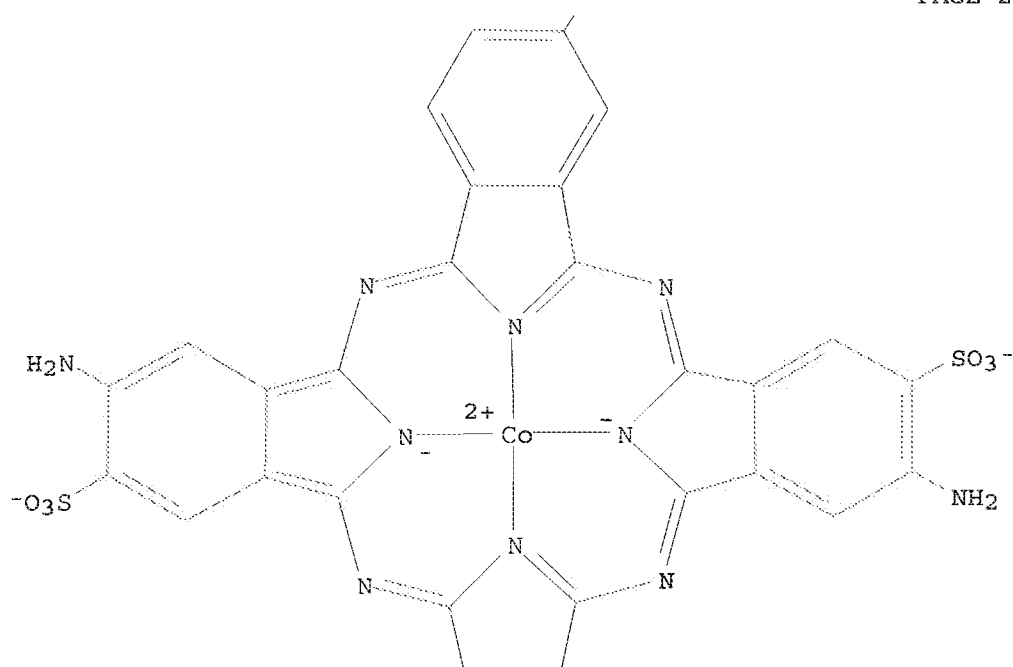


L47 8 ANSWERS REGISTRY COPYRIGHT 2007 ACS on STN
 IN Cobaltate(2-), [3,10,17,24-tetraamino-29H,31H-phthalocyanine-2,16-
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 MF C32 H18 Co N12 O6 S2
 CI CCS, COM

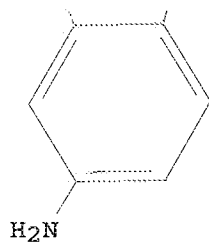
PAGE 1-A

NH₂

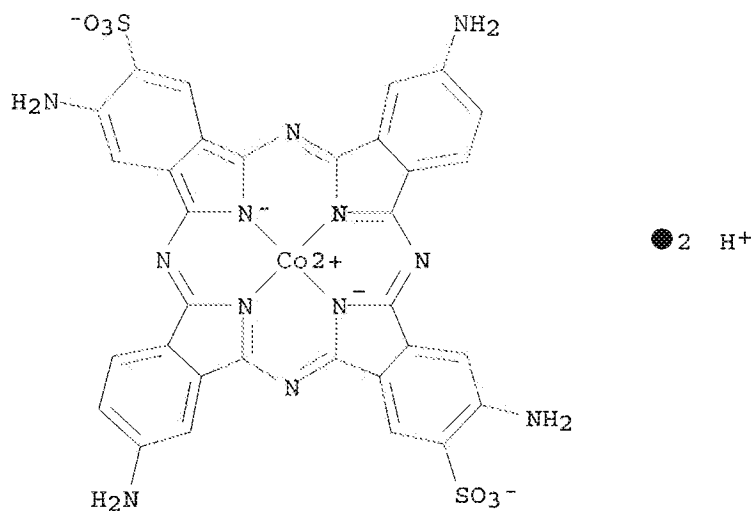
PAGE 2-A



PAGE 3-A



L47 8 ANSWERS REGISTRY COPYRIGHT 2007 ACS on STN
IN Cobaltate(2-), [3,10,17,24-tetraamino-29H,31H-phthalocyanine-2,16-
disulfonato(4-)-N29,N30,N31,N32]-, dihydrogen, (SP-4-1)- (9CI)
MF C32 H18 Co N12 O6 S2 . 2 H
CI CCS



ALL ANSWERS HAVE BEEN SCANNED

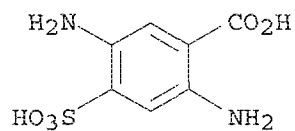
claim 32

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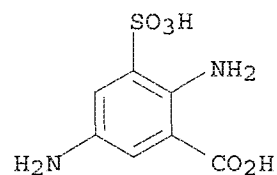
L6 2 ANSWERS REGISTRY COPYRIGHT 2007 ACS on STN
IN Benzoic acid, 2,5-diamino-4-sulfo-
MF C7 H8 N2 O5 S



PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT

HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1):1

L6 2 ANSWERS REGISTRY COPYRIGHT 2007 ACS on STN
IN Benzoic acid, 2,5-diamino-3-sulfo- (8CI)
MF C7 H8 N2 O5 S



PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT

ALL ANSWERS HAVE BEEN SCANNED